VOL. XXXII. No. 6. DECEMBER, 1908.

THE GEOGRAPHICAL JOURNAL

SUMMARY OF CONTENTS.

(For Details, see over.)

	PAGE
Problems in Exploration. I. Western Asia. By D. G. HOGARTH (*Map*)	549
The Hejaz Railway. By Lieut.-Colonel F. R. MAUNSELL (*Illustrations and Sketch-map*)	570
Dr. Sven Hedin's Expedition in Tibet. By Major C. H. D. RYDER, R.E.	585
The Swedish Magellanic Expedition: Preliminary Report. By CARL SKOTTSBERG, D.Sc., Leader	591
The Tribes of North-Western Se-chuan (*Map*)	594
Map of Part of North-West Rhodesia (*Map*)	597
Dr. Stein's Expedition in Central Asia. By Dr. M. A. STEIN	598
The Recent Crinoids and their Relation to Sea and Land. By AUSTIN HOBART CLARK	602
New Instruments for Travellers and Surveyors. By E. A. REEVES, F.R.A.S. (*Illustrations*)	609
Reviews	610

The Monthly Record. Obituary. Correspondence. Meetings of the Society. Literature and Maps of the Month.

TITLE-PAGE, CONTENTS, INDEX, ETC., TO VOL. XXXII.

LONDON:
THE ROYAL GEOGRAPHICAL SOCIETY, 1, SAVILE ROW, W.;
EDWARD STANFORD, 12, 13 AND 14, LONG ACRE, W.C.

For Notices as to the Society's Meetings and other important matters, see p. iv.

PUBLISHED MONTHLY.] [PRICE 2s.; 27s. PER ANNUM, POST FREE.

Registered for transmission to Canada by Canadian Magazine Post.

HENRY SOTHERAN & CO.,

Booksellers, Bookbinders, & Publishers

TO HIS MAJESTY THE KING.

GENERAL AGENTS FOR PRIVATE BOOKBUYERS AND PUBLIC INSTITUTIONS

IN INDIA, THE COLONIES, AMERICA, AND ABROAD.

MONTHLY CATALOGUE OF SECOND-HAND BOOKS, POST-FREE.

LIBRARIES PURCHASED, VALUED, OR ARRANGED AND CATALOGUED.

Telegraphic Address—BOOKMEN, LONDON. Codes—UNICODE and A B C. Telephone—P.O. CENTRAL, 1515.

140 STRAND, W.C., AND 37 PICCADILLY, W.

ART DEPARTMENT.

John Bale, Sons, & Danielsson, Ltd.,

83-91, GREAT TITCHFIELD STREET, W.,

Publishers, Printers, Chromo-Lithographers, Line and Half-tone Process Block Makers,

TO THE ROYAL GEOGRAPHICAL SOCIETY,

Royal Medical and Chirurgical Society, British Museum, Anthropological Society, Zoological Society, and numerous other Scientific Societies.

ALWAYS READY FOR USE. NEVER REQUIRES GRINDING.

KROPP RAZOR

English Manufacture

Real Hamburg Ground

BLACK Handles 5/6

A PLEASURE TO USE

IVORY Handles 7/6

EACH RAZOR IN A CASE.

WHOLESALE: OSBORNE, GARRETT & CO. LONDON, W.

DINNEFORD'S MAGNESIA

The Physician's Cure for Gout, Rheumatic Gout, and Gravel.

Safest and most effective APERIENT for regular use.

The Universal Remedy for Acidity of the Stomach, Headache, Heartburn, Indigestion, Sour Eructations, Bilious Affections.

For List of Council and Officers, Conditions of Admission to the Fellowship of the Society, and Society Notices, see pages ii., iv., vi., and viii.

The Geographical Journal.

Authors are alone responsible for their respective statements. In MS. communications all new or unfamiliar geographical names should be written in imitation of Roman type.

CONTENTS—DECEMBER.

PAGE

Problems in Exploration. I. Western Asia. By D. G. Hogarth (with Map) . . 549
The Hejaz Railway. By Lieut.-Colonel F. R. Maunsell (with 7 Illustrations and Sketch-map) 570
Dr. Sven Hedin's Expedition in Tibet. By Major C. H. D. Ryder, R.E. . . . 585
The Swedish Magellanic Expedition: Preliminary Report. By Carl Skottsberg, D.Sc., Leader 591
The Tribes of North-Western Se-chuan (with Map) 594
Map of Part of North-West Rhodesia (with Map) 597
Dr. Stein's Expedition in Central Asia. By Dr. M. A. Stein 598
The Recent Crinoids and their Relation to Sea and Land. By Austin Hobart Clark 602
New Instruments for Travellers and Surveyors. By E. A. Reeves, F.R.A.S. (with Illustrations) 609
Reviews:—
EUROPE—English Tin Mining. The Rhine. AFRICA—Tuat. African Natural History. Across Central Africa. AMERICA—Labrador. Climbing in Alaska. POLAR REGIONS—In Search of a Polar Continent. GENERAL—Education. Commercial Geography. SHORT NOTICES 610
The Monthly Record 618

THE SOCIETY
Gift of a Portrait of David Livingstone

EUROPE
Distribution of House Types in Germany
Shakespeare and the Waterways of Northern Italy

ASIA
Journey in Western China
Population of Peking
Physical Features of Sakhalin

AFRICA
The Boundary between Abyssinia and British East Africa (with Sketch-map)

AMERICA
Changes in the Bogoslov Islands, Bering Sea
The Tumuc-Humac Expedition in Dutch Guiana

AUSTRALASIA AND PACIFIC ISLANDS
The Ben Lomond Range, N.-E. Tasmania
German Research in the Western Pacific

POLAR REGIONS
A New Norwegian Arctic Expedition

MATHEMATICAL AND PHYSICAL GEOGRAPHY
Visibility of Mountain Summits at Great Distances
The Accumulation and Storage of Moisture in the Soil of Rivers of the Plains
Mountain Passes

GENERAL
Bird Migration
The Eleventh International Geological Congress
Honour to Mr. John Thomson
German Colonial School
A London Monument to Captain Cook
A New Travel Monthly
Port of Manchester: Erratum
Vicinity of Lake Te Anan: Errata

Obituary—Archibald Little. Dr. S. W. Bushell. A. J. Mounteney Jephson. Dr. Wilhelm Reiss. Rudolf Credner 629
Correspondence—The Bhot-Kol Glacier, Nun Kun Mountains. By A. Neve. Asiatic Travels. By G. W. Forrest 631
Meetings of the Royal Geographical Society, Session 1908-1909 633
Geographical Literature of the Month 635
New Maps 643

MAPS.

Sketch-map of the Hejaz Railway 571
Sketch-map of the Frontier between Abyssinia and British East Africa Protectorate . 622
Sketch-map to illustrate a paper on Unexplored Western Asia 648
Map of Part of the Province of Se-chuan 648
Sketch-map of Part of North-Western Rhodesia 648

SOLD BY

PARIS: Barrère.
VIENNA: Artaria & Co.
HAMBURG: L. Friederichsen & Co.
ST. PETERSBURG: Watkins & Co.

MANCHESTER: John Heywood.
EDINBURGH: Douglas & Foulis.
DUBLIN: Hodges, Foster & Co.

BERLIN: D. Reimer.
LEIPZIG: F. A. Brockhaus.
NEW YORK: International News Co.

ROYAL GEOGRAPHICAL SOCIETY.

PATRON.

HIS MAJESTY THE KING.

VICE-PATRON.

HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.

COUNCIL.

(ELECTED MAY 25, 1908.)

President—Major LEONARD DARWIN.

Vice-Presidents.

Sir HARRY H. JOHNSTON, G.C.M.G., K.C.B.
Rt. Hon. Lord CURZON OF KEDLESTON, G.C.S.I., G.C.I.E., etc.
DOUGLAS W. FRESHFIELD.
Rt. Hon. Sir J. WEST RIDGEWAY, K.C.B., G.C.M.G., K.C.S.I.
Colonel Sir COLIN C. SCOTT-MONCRIEFF, K.C.M.G., K.C.S.I., R.E.
Sir CLEMENTS R. MARKHAM, K.C.B., F.R.S., F.S.A.

Treasurer—EDWARD L. SOMERS COCKS.

Trustees—Right Hon. Lord AVEBURY, D.C.L., F.R.S.; Lord BELHAVEN AND STENTON.

Honorary Secretaries—Major CHAS. F. CLOSE, C.M.G., R.E.; Colonel Sir D. A. JOHNSTON, K.C.M.G., C.B., R.E.

Foreign Secretary—Sir JOHN KIRK, K.C.B., G.C.M.G., F.R.S.

Members of Council.

HENRY BALFOUR, M.A., F.Z.S.
Admiral Sir LEWIS BEAUMONT, K.C.B., K.C.M.G.
Colonel G. EARL CHURCH.
Sir MARTIN CONWAY, M.A., F.S.A.
Admiral A. MOSTYN FIELD, F.R.S.
Colonel H. W. FEILDEN, C.B.
J. STANLEY GARDINER, M.A., F.R.S.
Sir DAVID GILL, K.C.B., LL.D., F.R.S.
Rt. Hon. Sir GEORGE D. TAUBMAN GOLDIE, K.C.M.G., F.R.S., D.C.L., LL.D.
Colonel R. C. HELLARD, C.B., R.E.
Sir CLEMENT L. HILL, K.C.M.G., K.C.B., M.P.
Colonel Sir THOMAS HUNGERFORD HOLDICH, K.C.M.G., K.C.I.E., C.B.
JAMES F. HUGHES.
Rt. Hon. Lord LAMINGTON, G.C.M.G.
Dr. T. G. LONGSTAFF.
Sir GEORGE S. MACKENZIE, K.C.M.G., C.B.
Earl of RONALDSHAY, M.P.
Dr. AUBREY STRAHAN, F.R.S.
H. YATES THOMPSON.
Prof. W. W. WATTS, F.R.S.
Colonel C. E. YATE, C.S.I., C.M.G.

Secretary and Editor of Publications—J. SCOTT KELTIE, LL.D.

Librarian—EDWARD HEAWOOD, M.A.

Map Curator.
EDWARD A. REEVES, F.R.A.S.

Chief Clerk.
S. J. EVIS.

Bankers—Messrs. COCKS, BIDDULPH and Co., 43, Charing Cross.

Candidates for admission into the Society must be proposed and seconded by Fellows, and it is necessary that the description and residence of such Candidates should be clearly stated on their Certificates.

It is provided by Chapter V., § 1, of the Bye-Laws, that—

"Every Fellow shall, on election, be required to pay £5 as entrance fee, and £3 as annual "subscription for the current year, and thereafter a yearly subscription of £3, due on the 1st January "of each year; or he may compound either at entrance by one payment of £45, or at any subsequent "period on the following scale, provided that there shall be at the time no arrears due by him to "the Society:—

Fellows of 10 years' standing and under	15	...	£30
"	15	"	"	20	...	£24
"	20	"	"	and over	...	£18 15s.

"No fellow shall be entitled to vote or to enjoy any privilege of the Society while in arrear."

All Subscriptions are payable in advance, on the 1st of January in each year.

The privileges of a Fellow include admission (with one Friend) to all ordinary Meetings of the Society, and the use of the Library and Map-room. Each Fellow is also entitled to receive a copy of all the Society's Periodical Publications.

Copies of the Year Book, Regulations, and Candidates' Certificates may be had on application at the Society's Office, 1, Savile Row, London, W.

The
Geographical Journal.

No. 6. DECEMBER, 1908. Vol. XXXII.

PROBLEMS IN EXPLORATION.

I. WESTERN ASIA.*

By D. G. HOGARTH.

It is often said that the day of geographical discovery is drawing to its close, and, indeed, that there no longer remains any part of our globe's surface, except the circumpolar regions, where the explorer can hope to reveal important facts wholly unsuspected or unascertained. Another Alexander, he sighs for new worlds to conquer, cries for the Moon—*et sic itur ad astra!* But why should the explorer despair just yet? There lurks unseen in the world enough to last his time and, withal, his son's; and the Royal Geographical Society, which has done so much to encourage him in the past, now proposes to offer him renewed incentive by patronizing a series of summary discourses on the Still Unknown, of which the following is to be the unworthy inaugural. The explorer is perhaps suffering from nothing worse than reaction after a day of very great things. It is true that Africa is no longer the Dark Continent; but it is guarding jealously at this moment some very dark spots. Even in British territory, how much is known of the inner Shilluk districts of the Sudan, or the region between the upper waters of the Blue Nile and the limits of Uganda? And who has followed Rohlfs down the line of Senussi oases from Tripoli or the Cyrenaica towards Wadai?

We may be nearing a day of lesser things, but the day of little things is still far off. An extraordinarily small part of the land on the globe has been charted yet even by minor triangulation. Nay more, when it is borne in mind how much there is in geographical exploration, how much must be ascertained before a scientific geographical text-book can be written about a country, it may be said that any

* Read at the Royal Geographical Society, November 2, 1908. Map, p. 648.

land not long controlled by a thoroughly enlightened and progressive nation must still be, in some respect and degree, *terra incognita*.

The particular region of the world on which I am asked to speak to-night lies comparatively near home, and, in one small part at any rate, is very familiar to us. But, nevertheless, I hope to show that it still offers every variety of field for geographical exploration. In Western Asia, by which I mean all Asia lying this side of the broad continental isthmus which divides the Black sea from the Persian gulf, we have vast areas on which no European foot is known to have trod, nor even any European eye to have looked. We have other areas, almost as large, which have been crossed always in haste, and often in fear; we have regions visited by perhaps a score of travellers since the revival of learning, but inhabited by peoples of whom we have learned much less than about the Polar Eskimo; we have others held by intricate varieties of race, the reasons of whose affinity or differentiation remain obscure; and, in short, we have a whole of which only the coasts, two tiny corners, Palestine and Sinai, and the narrow belts visible from half a dozen lines of railway and two navigable rivers, have been surveyed with anything approaching to scientific precision.

The greatest unseen area lies in Arabia, that huge peninsula which makes somewhat more than half of the whole, and in no part, out of sight of its coasts, is well enough known to geographers to be described so fully as, say, Tibet. Almost all the southern half of Arabia is occupied, according to native report, by a vast wilderness called generally *Ruba el-Khali*, *i.e.* Dwelling of the Void, but on its western edge *el-Ahkaf*, *i.e.* the Dunes, and on its eastern edge *el-Dahna*, a name given elsewhere by Arabs to a rolling gravelly steppe. No European has ever entered this immense tract, which embraces some 600,000 square miles; but three travellers, Wellsted in 1836, von Wrede in 1843, and Joseph Halévy in 1870, have claimed that they gazed on its uttermost fringes from points of vantage west, south, and east respectively. It is very doubtful, moreover, whether any native has ever crossed any part but its extreme corners, or, rather, certain tongues which it throws out towards the Persian gulf between Nejd and Oman, and towards the Indian ocean, south-west of the latter province. Some maps mark caravan-tracks running through the heart of this desert from the central Hadramaut to Maskat and Riad; but Van den Berg, a Dutch official in Java, whither colonists from Hadramaut and South Arabia generally resort in considerable numbers, wrote in 1885, after much questioning of the Javanese Arabs, that none whom he had met knew anything of the Ruba el-Khali but its name; and that, according to his information, there was no direct communication at all between the Hadramaut and either the Wahabi country of Nejd or Maskat. Travellers overland from Yemen to Oman make a long *détour* into south Nejd and thence cut across to Bireima in about fifteen stages, of

which eleven are waterless. For the rest, we have only very vague reports recorded at second hand by explorers like Palgrave and Burton (who themselves never approached within some hundreds of miles of the Ruba el-Khali) to the effect that there is some oasis life of a very primitive kind and some possibility of travelling in the awful waste. The latter explorer thought it might perhaps be crossed in early spring with she-camels giving full milk. But it will take a bold man to venture out for the passage of either 850 miles west to east, or 650 north to south in the isothermal zone of the world's greatest heat, with no better information than we possess. Perhaps some air-pilot in the far future will be the first to try. One cannot reasonably urge this enterprise on any explorer. Arabia is everywhere a lean land at best, and there is little doubt it is at its leanest in the Ruba el-Khali. There is, in all likelihood, very little to see from one end to another but sand, gravel, naked outcrops of rock, wind-carvings of the friable surface, and here and there a group of wild palms. Still, who can say for certain? Here is a region as vast as the circumpolar sanctuary, and as little seen. It must receive some precipitation from the monsoons which affect the districts east, south, and north. It does receive drainage from the Oman mountains and the wadys of Nejran. It has been reported to contain black Bedawis and tracts of palms. It may be ranged by a curious drinkless fauna like the northern Arabian desert, the Nefûd. It may hide anything you like to imagine in its secret area, three times the size of these islands of ours. We know just as much or as little of it as the Moslem geographers knew in the Middle Ages—and that is all!

About its fringes, however, lie districts, also unvisited, which we may hope will be explored some day. The biggest feat left for a traveller to perform in Arabia—perhaps in all Asia—is to get across the Yemen, follow Halévy up to Nejran, and pass thence beyond his farthest up the long Wady Dauasir to Aflaj and High Nejd, whose southernmost provinces, Harik and Yemama, of ancient fame for their waters and comparative fertility, have never been seen by Western eyes. This route is, we know, travelled by caravans. The first part of it, in the Wady Dauasir, as Doughty was informed by a man of the Kahtan, lies through a long palm tract for over 100 miles of march. There are plenty of wells, and the Arabs are not inhospitable to travellers conducted by one of their own kin. Aflaj is an irrigated district, and southern Nejd is a grazing and garden country. There are, it is known, important urban centres in it, particularly Kharj and Hauta, and it seems to be the chief breeding-place of the Nejdean horse. The fortunate explorer will have very important hydrographic and orographic problems to solve. He ought to determine at last what becomes of the inland-flowing waters of west central Arabia, such as the Nejran wady streams seen by Halévy; and whether the limestone

ranges of southern Nejd are or are not connected with the Red Sea coastal highlands. He may be able to revisit, or at least report at second hand upon, that mysterious valley region of Yabrin, which Moslems in the Middle Ages heard of as lying on the north central fringe of the Great Desert, and containing half-buried cities, among whose ruins the Bedawis found coins. He should learn much about the mysterious Kahtan Arabs and their possible African origin. He will be in a position to tell us whence the energy and power of the originators of the Wahabi movement were derived. All this, of course, if he comes back. It is a serious reservation. Under present conditions the western explorer is not wanted in Nejd, and he may find it easier to get in than out, except to another world by short shrift of club or spear. He will have to face or elude not only religious fanatics of the extremest type, but a whole population dependent on slave-labour, and accustomed for generations to regard Western men, and especially Britons, as destroyers of the means to social wealth. The device of disguise one never likes to recommend. Like an *alibi*, the worst of all defences if unsuccessful, it almost certainly entails speedy death. A man might go, as did Halévy, in the modified disguise of an itinerant Rabbi, and be forwarded by co-religionists of Nejran. But that venture needs moral, as well as physical, fortitude of no common order; for, in addition to the peril of one's real character being discovered, the severe hardships and indignities incidental to the assumed one have to be endured. Halévy was kicked from pillar to post through Yemen and Marib. You might go as Doughty did through northern Nejd, as a poor Christian *hakim*, begging your way from well to well and camp to camp; but the risk would be very great, and the opportunities for doing scientific work under such conditions but small. You might go *en prince*, as did Nolde to the Emir of Hail in 1893; but then only by grace of the Turks at the start from Yemen, and in the strength of your own right arm beyond. Probably an explorer must wait till some favourable political conjunction occurs—if ever by chance the restoration of our paramount influence at Constantinople should coincide with overtures made, as in 1865, by the Wahabi power in south Nejd to the British power in the Gulf. Then he should try his luck openly in his true character, as a person of quality visiting other persons of quality, carrying instruments and notebook, as even Doughty did, not abjuring his Christianity—for this will serve him with the ragged aristocrats of the camps—and healing the sick as he goes. But he had better make his will before he starts, or, better still, be a friendless orphan with no will to make.

There remains also to be accomplished a much shorter and perhaps less hazardous journey through the unknown round the south-western angle of the Great Desert. Starting from Aden or from Yemen, an explorer must try to get to the headwaters of the great Hadramaut wady and follow it down to its mouth on the Indian ocean. Only in

mid-route will he find tracks of previous travellers, of von Wrede, of Hirsch, and of Bent, who all went up to Central Hadramaut direct from the southern sea, and returned as they had come. It would add much to the value of this journey if it were made in its first part through Marib, the old centre of the Sabæan power in the Yemen *hinterland;* for despite the visits of Arnaud, Halévy, and Glaser, we still remain very ignorant of that land of ruins and inscriptions, watered by huge irrigation systems and traversed by a Roman army in the time of Augustus, but now lapsed to semi-nomadism. For one thing, no photographs have ever been published of the ruins and of the great broken dam at the Sabæan capital. There is, however, at this moment, a project afoot for a certain bold explorer, who has had unique experience of the Aden *hinterland*, to attempt further exploration in and about the Great Desert. It will be a great day for this Society if, thanks to its support, even a corner should presently be lifted of that vast South Arabian veil.

Northern Arabia is in another geographical category. We can be fairly sure that there is no sensational secret to be learned about it in the purely physical field. Of course, it is almost all wholly unsurveyed in any scientific sense of that word, and we cannot chart, except by the roughest approximation, its lines of heights or its lines of drainage. But it is, as I have said, a very lean land, and largely of a very uniform surface, whose outstanding features are half-obliterated by wind-erosion and sand-drift—a land which has no permanent streams and is terribly naked. Whoso has seen in any part its soft desert, its gravelly steppe, its sand-bottomed and rock-walled wadys, its low pans where palms can live, and its high volcanic *harra* tracts of corrugated lavas, has virtually seen them in every part. The geology is very imperfectly known; but perhaps the most virgin field for an explorer lies in its ethnography, and especially its anthropology and political grouping. No European is known to have been in any part of Nejd since 1893, when Nolde rode from the north to Kasim and back, and none in south Nejd since 1865. It would be most interesting to have a scientific report at first hand on the present state of the Wahabis; on the political relations of the northern and southern sections, led by the emirs of Hail and Riad respectively; and on the relations of both to the great Bedawi tribes, and to the Ottoman administration which is established in the coastal districts on either hand, and is for ever trying to make good a footing in the centre. But that would not be altogether a geographer's report. Nor is there much to do in Hejaz except in the departments of pure cartography and political geography. To effect much in the first department would be almost impossible under the peculiar political and religious circumstances of the province, unless one happened to be an engineer on the Hejaz railway. Hitherto the small European

element employed in the direction and construction of this remarkable line—perhaps the most remarkable piece of railway pioneering of our time—has been exclusively German. Since, however, the star of Great Britain seems to be in the ascendant once more in Constantinople, we may possibly be admitted to equality in the future. But the rail-head is now far within the borders of the Holy Land, and, indeed, advanced to the southward of Medina itself; and it remains to be seen what policy will be prescribed in the future by Ottoman respect for local Moslem prejudice, backed as it will be by Moslem feeling throughout Asia and Africa. If a compromise has been come to about Medina, where the railway station has been built a long way without the city, and Christian engineers and the like will, as in the days of the Egyptian occupation, be restricted for a long time to come to the suburb, there will be less difficulty about Mecca, which has always been the less exclusive of the *Haramein*. We need much more information about both the mountainous country between Medina and Mecca, and also that lying south of the latter town. Indeed, a journey from Taif southwards to Yemen either by the coastal district of Asir, or farther inland by Taraba and Wady Bisho, is almost as much worth an explorer's risk as any in Arabia. But the making of any more European pilgrimages to Mecca is geographically of little use. Since Snouck Hurgronje's residence in the Holy City for five months in 1885, Mecca has become as well known to us as, say, Sanaa, the capital of Yemen. We have abundant topographical and social detail concerning it, and photographs of its streets, its mosques, its Holy of Holies, and its neighbourhood. Scores of Moslems, especially Indians, with a more or less European education, go there now, and some write accounts of their visits. There is even now and again a pilgrim of Western nationality, who has become a genuine Moslem. An American, I believe, accompanied the *haj* this last time with his family. To repeat Burton's exploit in these days, therefore, would be to effect a mere *coup de théatre*. We can learn all we want about Mecca without giving further offence to Mohammedan feeling by masquerading in disguise.

In the mean time, a very considerable advance in our knowledge of north-western Arabia has, in fact, resulted from the making of the Hejaz railway, as may be judged by any one who will take the trouble to read the two admirable papers by General Auler, published as *Ergänzungshefte* of *Petermanns Mittheilungen*. In the latest, which appeared this past summer, the general, who is in the Ottoman service, and was commissioned by the Sultan to survey the completed line as far as El-Ala, carries his description up to the frontier of the Holy Province, and adds some information about the country to southward, derived from the reports of Turkish engineers. The track runs along the depression behind the great lava-capped masses which form the culminating heights of the Red sea highlands, and tower in places

to some 10,000 feet. General Auler observed carefully the superficial geology and features of landscape, and he adds much to what we had already learned from the only previous visitor with geological knowledge, namely Doughty. But for my present purpose it is more necessary to emphasize the fact that his information is confined to a very narrow strip, than to describe that strip itself at second hand. There remains plenty for explorers to do for some time to come on either hand of the line, and particularly in the mountainous and most difficult region which lies between the central section of it and the Red sea. This has been crossed, to my knowledge, only by one European. This was Julius Euting, on his way from el-Ala to el-Wij in 1884. But he was flying for his life most of the way after an encounter with the Jeheina Bedawis, and saw even less of the country than did Doughty when he went wandering with the Moahib tents on the Harra west of the Medain Salih valley in 1877.

It is a long time since any one has described in any detail the littoral districts of the Persian gulf north of Oman. In Hasa, outside the oases which contain the large urban centres of Hofuf and Mubarriz, it is evident that the ordinary thin steppe and desert conditions, with ordinary thin nomadic life, prevail; and the same appears to be true of all Katr. But it is much to be desired that some ethnologist should make a study of the mountainous region between Katr and Oman, which runs out into the gulf as the immense headland of Ras Musundam. There is reported the survival of a small Negrito race, prior in origin to the Semitic stock of Arabia, which leads a semi-troglodyte life in the hollows of the Cape. Unfortunately, this is more or less the domain of the so-called Trucial Chiefs of the Gulf, that is of tribal *sheikhs* of piratical tradition and habit, who have been forced by our patrolling cruisers and gunboats to expend their bellicose energies in internecine warfare on land instead of raiding the pearl fleets of Bahrein, and running slave cargoes as of old. The agreement implies, on our part, abstention from landing; and therefore, though British ships are for ever off this coast, they seldom communicate with it, and still more seldom put any one ashore. There is a very interesting and compact piece of geographical work to be done on Ras Musundam, which would make a minor reputation for a bold and hardy explorer.

So much for Arabia proper, on the whole the most virgin, though perhaps not the most promising, field for exploration in the continent of Asia. The geographical conditions of its upper half extend far to north of the actual peninsula, or "Island of the Arabs," as Moslem authors have named it; and our knowledge or our ignorance of the Syrian *Hamad*, or hard desert, continues about the same as of North Nejd up to the latitude of Tadmor or Palmyra. This is to say, explorers have crossed it on a few lines, riding fast from well to well, always moving on for fear of Bedawi raiding parties, finding tents and herds

of the various tribes of the great Anazeh family scattered over its face, but no permanent settlements except certain well-known ones on the fringes, of which the chief are in the southern oasis of Jauf. Recently, in the spring of this year, a new line has been explored by two British officers, who, starting from Baghdad, followed a series of wells along the north edge of the Nefud to Jauf. Their report will be given this session to the Society.

On the western fringe of the Hamad, in that innermost country beyond Jordan which was once the eastern *hinterland* of Moab, Ammon, and Bashan, the investigator of ancient geography and antiquities has still something to do. The splendid volumes issued by Brünnow and Domaszewski on the Roman province of Arabia (*i.e.* Arabia Petræa), and the accounts published still more recently by Dr. Alois Musil on Moab, and by Miss Gertrude Bell on the Hauran, cover fairly well the main part of the trans-Jordanic districts, and fill up large blanks left by the Palestine Survey. But it is evident from their descriptions that settled life existed anciently on spots still further east, and that a profitable exploration remains to be done in the Hamad itself beyond the Wady Sirhan and below the eastward slope of Jebel Hauran. The same might indeed be said of all eastern Syria on the edge of the desert, even north of Damascus. The Princeton expedition, led by Mr. Howard Butler, opened to our view four years ago quite a new land of deserted towns and villages lying forgotten east of the Orontes basin; and the whole triangle, whose base runs from Homs to Der el-Zor while its apex reaches almost to Aleppo, is still imperfectly known from any point of view. It is ranged by the Anazeh tribes, who find here, under the influence of the Mediterranean rain-clouds and within the fringe of the Tauric precipitation, their best summer grazing-grounds, and tend more and more, under Ottoman pressure, to adopt settled life. They have, indeed, established considerable permanent villages, almost towns, *e.g.* at Resáfa, in the upper part of the triangle. The district, therefore, is becoming gradually less dangerous than it used to be, and, except on rare occasions of strife between the Ottoman Government and the Anazeh or the Hauran Druses, is no longer subject to Arab raids.

How marked a change has taken place in north Syria during the reigns of the last three sultans may be estimated by any one who compares the descriptions penned by European residents in Aleppo in the earlier part of the nineteenth century, and by the officers of our Euphrates Expedition, with the present state of the country. Consul Barker used to ride but an hour or two out of Aleppo to hunt with Bedawi sheikhs, and Chesney and Ainsworth met with none but wandering Arabs south of Birejik. I passed last spring from Aleppo to Mumbij and the middle Euphrates, finding the whole land seamed by the plough and dotted with villages. Mumbij, the ancient Hierapolis-Bambyce, where Chesney and his men saw only a few nomads who had stacked their

weapons in a deserted tomb, is now a large Circassian township, the centre of an imperial estate worked by peasants living in over one hundred and fifty villages. Carriages were running from Aleppo to Baghdad by way of Meskineh and the right bank of Euphrates, and from Aleppo to Seruj, Urfa, and Mosul by way of Mumbij and the old crossing of the great river near the Sajur mouth—a route abandoned for centuries till two or three years ago. The Turk may be (or, shall we say now, may have been?) a bad ruler of settled lands, but he settles the unsettled. Like his religion, he can improve the worst, if he does not make the best. At any rate, he can make and maintain some sort of civilization where the Arab, it must be confessed, when left to himself, seems to produce nothing better than barbarism.

I have well-nigh exhausted the parts of Western Asia where geographical exploration, in all its departments, has still a very wide field. There remain, perhaps, central Mesopotamia, a rolling down country, not unlike the Syrian Hamad, very featureless and given up to nomadism, which certainly hides no secret of importance, and has been traversed in considerable part of late by that indefatigable explorer, Major Mark Sykes; and the wild disturbed mountain ranges of the southern Turco-Persian frontier, the fastnesses of the Bakhtiaris, and the Lurs, visited by many travellers since Layard's day, and for all the dangerous turbulence of their inhabitants, comparatively well known. There remain also, certainly, the tangled mountains of Kurdistan, recently explored anew in divers parts by Lord Percy and Colonel Maunsell; but not quite in all parts. I would call especial attention to two Kurdish districts which, on account of their insecurity, are yet virgin. The first is comparatively small, about 50 miles square, situated in the southern part of the wild mountainous region of Hakkiari, and south of the great culminating group of Alpine peaks, which are called the Jelu and Sat Daghs. The highest summits of these, such as Galiashin in the Jelu, have never been ascended. They used to be reckoned over 17,000 feet in height, but these estimates have been reduced by Colonel Maunsell, and probably the highest point, that of the Sat Dagh, does not reach 15,000 feet. None the less, the traveller here sees perpetual snow, and even permanent glaciers, though of small size. Thence to the junction of the Bradost river with the Zab roll downward, in ever-decreasing folds, long open ranges, which are the summer haunts of the Apenshai and Dustik Kurds; and these, so far as I am aware, no one has yet penetrated beyond the central village of Oramar, visited for a single night by Lord Percy in 1899. To see and to survey this square of 50 miles, and to visit the dangerous Kurdish districts lying on and east of the Persian border, between Rowanduz and the southern end of the Urmi lake, would evidently be still worth a traveller's while.

The other district to which I wish to direct attention lies in the

extreme north-west of what is roughly understood as Kurdistan. It is that "Swiss" region (as Colonel Maunsell has named it) of the Dersim, enclosed between the two main branches of the Euphrates, and containing the Alpine mass of the Muzur Dagh. This is a larger district than the first, measuring some 100 miles from east to west by about half as much in breadth. We have no description of any part of its central highlands except along the line of a military road which bisects it from south to north between Palu and Kemakh. I believe that more than one of our consuls at Erzerum has made a short excursion into its outskirts to visit friendly chiefs; and several travellers—for instance, Colonel Maunsell and Major Sykes—have skirted it on the south, touching the inhospitable border settlements of its southernmost tribe, the Siphani Kurds. I myself have seen its peaks from the west and north, but nothing more. It is known to be held by a group of tribes which have never acknowledged Ottoman authority, and quite recently were in open strife with it; and these tribes are all spoken of as *Kizil-bash, i.e.* "Red-heads," a name given by Turks to peoples whom they regard as practically pagan. Wherever one encounters that name one may be sure of one thing—that the group so designated belongs, at any rate, rather to the Shiah than the Sunni section of Moslems. Sometimes it can be proved to be of comparatively recent Persian extraction; more often the reason of its continued existence in the territory of the Sunnite half of Islam is lost in obscurity, and seems only to be accounted for on the theory of isolated survivals of pre-Islamic Incarnationist groups, such as are found still in the west Syrian mountains, in Jebel Sinjar in Mesopotamia, and in southern Kurdistan. The Dersimlis, at least, are said locally to believe in incarnation, and to be more in sympathy with the Armenian Christians than with the Osmanlis. Indeed, they have been said to be actually crypto-Christians of Armenian blood. One cannot but suspect that they are really more or less Manichæans; for the historical centre of that heretical faith lies just across Euphrates and in sight of the Dersim hills, at Divrik, the ancient Tephrike.

To investigate the problems of Dersimli race and creed, to survey the unvisited valleys and peaks of the Muzur Dagh and its eastward continuation, and, last but not least, to find cuneiform memorials of the old Vannic kingdom, rumours of whose existence in the Dersim were brought to me in the neighbourhood in 1894—these objects offer a very promising bit of exploration to a bold traveller, prepared to leave at the foot of the hills the escort with which he will have been provided at Erzinjian, and to throw himself on the hospitality of chiefs who, I was told, are particularly well disposed towards our race. It says much for English-speaking travellers and missionaries that, on the whole, Europeans are so well received in Kurdistan. For Britons and Americans have almost monopolized the exploration of that land.

Kurdistan is a mountainous region from end to end, and so also are Luristan and Bakhtiari Land—mountainous regions, moreover, inhabited by wild and suspicious tribes, partially controlled at best by external imperfect governments, and more often under no government but their own. In such it need hardly be said that, whatever be the case with the lower valleys, the higher ones and the mountain summits remain, in nine cases out of ten, unvisited. To the best of my knowledge, not half a dozen of the highest mountains in the regions mentioned have been made the object of ascents—Ararat, for example, on several occasions, and the two great volcanic peaks, Sipan and Nimrud, which overlook the Lake of Van, and also Mount Galianu in the Jelu group. There remain hundreds of lofty summits, and below them thousands of lofty valleys, in this immense mountain region, which no European foot has yet trod. It is not possible within the limits of this paper to specify these. The two Kurdish districts, which I have mentioned above, are only the most important among several areas which might have been coloured on this map in the lightest tint. Even in the plain regions of Syria and Mesopotamia, also, there are unvisited areas. For examples one may quote much of the rolling down country between the Koweik and the Sajur north-east of Aleppo; or that between the Euphrates and its left-bank affluent, the Belik. But enough is known about the immediate environment of such unvisited areas for their general character to be no longer doubtful. They could be defined accurately only on a very large-scale map made by careful comparison of the material in the possession of the best British and foreign cartographers and the military authorities. Such a map would be a costly undertaking, but very useful.

How often and minutely a country may be explored, but yet, if it be not under a government of the European type, how little visited its mountains will remain, may be illustrated from yet another region in Western Asia, namely, Asia Minor. This region has been most patiently surveyed for its antiquities by expeditions of all nationalities during something more than a century, but archæologists have only just bethought themselves that they have neglected, from first to last, those most likely places, the hill-tops. We ought to have taken warning earlier from the case of the Nimrud Dagh, a great southern bastion of the Taurus thrown forward where the Euphrates emerges from the mountains near Kiakhta; for there, some twenty years ago, explorers were induced by shepherds' reports to ascend to the summit, and find a great monument of one of the kings of Commagene, surrounded by colossal statues seated in the snow. But it is only in the past two years that the discoveries made by Miss Gertrude Bell of a Hittite inscription near the summit of the Kara Dagh south of Konia, and of remains of sanctuaries on the Karaja Dagh and the volcanic Hassan Dagh some 80 miles distant to north-east, have

suggested to scholars a wholly new field of exploration in Asia Minor. The little windy chapels which stand as near heaven as may be on almost every peak in Greece evidently had predecessors on the summits of West Asian hills as far back as Hittite times; and the sooner we go back to Asia Minor in all humility and climb the peaks we have been wont to ride round or beside, the better. Even the very few conspicuous peaks already ascended in times past, such, for example, as the great extinct volcano of Erjies, which towers over Kaisariyeh to a greater height than any other summit in the peninsula, ought to be climbed again, now that we know better what to seek. The future mountaineer in Asia Minor should make many discoveries which will interest others than archæologists. Highland valleys and afforested slopes are everywhere the refuge of survivals of old broken races, and in Asia Minor particularly of the little-known Takhtajis, to whom von Luschan has devoted so much study, and of the various Kizil-bash groups.

The districts in the peninsula which need most this sort of Alpine exploration are, first, the highlands of Lycia, a tremendous ganglion of the Tauric system where many summits overtop the 10,000-feet line, and the slopes and valleys are densely wooded; secondly, that lofty part of the spine of Taurus, known as Bulgar Dagh, near the Cilician Gates, and the still higher offshoot sent thence northwards and called the Ala Dagh; thirdly, the isolated systems which start rather suddenly out of the tableland of central Phrygia and Cappadocia over a wide area from Sultan Dagh, west of Aksheher, to Yildiz Dagh, north of Sivas; and lastly, the magnificent Lazi ranges east of Trebizond. There are many others no better known, though nearer to centres of civilization, such, for instance, as the Boz Dagh, the ancient Tmolus, of wide and evil fame for brigands, which rises almost in sight of Smyrna. In general, one can only say that there are very few conspicuous hills in all Asia Minor of which ascents have been recorded, and of which ascents would not be well worth the making.

Apart from groups of mountains whose upper valleys are unexplored, there remain at least three districts in Asia Minor very imperfectly known. These are, first, the valley of the Euphrates for about 50 miles of its course from the point where it enters the main chain of Taurus at Kumur Khan to the point where, after passing through tremendous gorges by a series of rapids, it comes more or less into the open again at Gerger. This tumultuous part of its course, during which it falls about 20 feet a mile, has been navigated on *kelleks*, or skin-buoyed rafts, first by von Moltke in 1839, and more lately by an American explorer, Mr. Ellsworth Huntington. But to be whirled down in this fashion at imminent risk of disaster in every rapid is not to explore the main valley, still less the lateral valleys, and the accomplishment of these hazardous passages has not added much to our knowledge of what lies on the shore. To follow either bank

continuously appears to be impossible; but to make descents from point to point down the tributary valleys on both banks would be a useful, if toilsome, piece of exploration, for which students of the Roman frontier defences, who wish to know how the Euphratean lines ran between the camp of the Tenth Legion at Melitene and that of the Sixteenth at Samosata, would be peculiarly grateful. It should be coupled with a survey of the Tauric chain west of the right bank, carried back as far as the oblique pass through which runs the high-road from Malatia to Marash; for this part contains ill-known passes, and a very interesting Kurdish society still in a semi-pagan state.

The second obscure district lies in the heart of Asia Minor in the ancient Cappadocia, and embraces the hilly country round which the river Halys finds its way north, after it has come south-west nearly to Kaisariyeh. This block of country, roughly about 100 miles square, and interposed between Sivas and Yuzgad on the east and west, and Zile (Zela) and the elbow of the Halys on north and south, was first pointed out to me as a field for exploration by the late Sir Charles Wilson many years ago. He said that it contained an interesting and little-known Kizil-bash population, and he prophesied that many interesting monuments of antiquity would be found in it. His foresight has been signally illustrated by the recent discoveries of a colossal "Hittite" eagle in stone and of a four-sided monument with long Hittite inscription, on two deserted sites on the south-western edge of the district. Regard being had to its proximity to the great northern Hittite capital, now being excavated at Boghaz Keui by the German Archæological Society, and to its intermediate situation between this city and the Cataonian district which is full of monuments of the same prehistoric civilization, its further exploration will be awaited with keen interest.

The third district embraces the upper valleys of both the southern and northern branches of the Gyuk Su, the ancient Calycadnus, in the central south of the peninsula. This is both smaller in extent than the preceding district and less promising. The explorer should enter from Alaya on the Gulf of Adalia, make his way to Ermenek, ascend the southern valley, cross to the northern, and descend this to Selefke at the mouth of the united stream. He will pass through a very beautiful upland country, mostly unvisited, inhabited largely by a semi-nomadic population, and probably full of ancient remains.

In all the districts of Asia Minor, at a distance from railways and the larger seaports, there is much cartographical material still to be collected. Every traveller who penetrates inland finds that the latest maps constantly mislead him in such respects as the relative position of villages to one another and to streams. For example, I was twice led, in 1894, by the latest map of Eastern Asia Minor to steer for a village on my own side of an unfordable and unbridged river, only to gaze on it illumined by the sunset on the farther bank. Made

as the map of all inland Asiatic Turkey, except part of Syria and Sinai, has been in the main from rapid route surveys, which often started from, and ended at, points not astronomically fixed, and were seldom tied in one to another, its specious appearance of precision should not discourage travellers from continuously recording topographical notes wherever they may be on the plateau, out of sight of the two or three railway lines. I do not suggest that they try to make exact charts with theodolite or even plane-table themselves. That is no more permitted to a stranger in Asia Minor than on the continent of Europe. The Turk is a jealous ruler and a fairly vigilant one, and the suspicions of his local officers make them prompt to take fright at the sight of surveying plant. Usually one can use nothing more elaborate than a prismatic compass in the more civilized districts, and hope to do no better than check dead reckoning by a few traverses. The one important exception to the Ottoman policy of excluding map-makers has been made, of course, in Palestine, where British diplomacy secured exceptional facilities at a moment of British ascendency by pleading the peculiar religious interest of the country and the needs of pious wayfarers. Expeditions, also, sent expressly to open ways of communication which would be of advantage to the Government have, of course, not been hindered from surveying the lines proposed. Thus we have fairly exact charts of the middle and lower course of the Euphrates made by Chesney's engineers in the thirties, of the lower courses of the Tigris and Karun, and of the Shatt el-Arab; also of the divers trunk railways and their immediate vicinity. When the chart of the Hejaz line can be utilized, it will make a long base for future surveys in western Arabia, and the Baghdad railway will ultimately give us a diagonal measured line across almost all Asiatic Turkey. The chart of its proposed route, however, beyond the present rail-head at Bulgurli, north of Taurus, is not yet available.

What is true of all inland Asia Minor is true of nearly all the rest of Asiatic Turkey—the best existing maps need everywhere verification, and filling in, and can almost always be amended even by the very summary methods open to the mere traveller. If he restrict himself to a comparatively small district and traverse this repeatedly in various directions, he will, of course, do better cartographical service than if he add but another to our large stock of more or less disconnected route-lines. A good example of the value of such localized work is supplied in the first instalment of Dr. Alois Musil's recent 'Arabia Petræa.' With German foresight and thoroughness this archæologist had himself trained in surveying before he went afield, and was enabled to add to science not only the knowledge of the great ruins of Kuseir el-Amra, but also a very much improved map of Moab. I myself saw last spring another very accessible and easy field for such work. The whole district between Aleppo and the Euphrates, extending north to the Sajur river

and south to the edge of the Desert, is left almost as blank on Kiepert's latest map as the Desert itself. A few caravan tracks are drawn through it with those unwavering lines which suggest either a perfectly flat and featureless plain country, or the perfectly plain ignorance of an uncompromising cartographer. A very few village names and wells occur, usually written simply "Dorf," with an added note of query if off the tracks, and at suspiciously equal intervals if on them. I started from Aleppo for Bab, seven hours away, and during even that short journey learned, to begin with, that there were three times more villages in sight than were marked on the map, and that Bab itself was considerably further distant and more to the north than the cartographer had placed it. Thence I expected to jump off into an almost uninhabited steppe, with 20 miles to cover as far as a solitary midway station called Arimeh, and 20 more to Mumbij. I had the pleasant surprise of finding that each of those stages reduced itself to about two-thirds of the cartographer's distance, and that there was quite an embarrassing choice of villages all along the way, lying in rich ploughed lands. When later I covered the further road from Mumbij to Kalat en-Nejm on the Euphrates, I passed six villages on a road where only one is marked, and that does not exist. Any one armed with Kiepert's map, a prismatic compass, and a reliable watch, who will spend even a month in going to and fro between Aleppo, the Sajur, and the Euphrates, can fill hundreds of names and features into a cartographic blank, which is in reality as well populated and fertile as any region in Syria.

This, then, there is for an explorer to do even in so near a region as Western Asia. Almost everywhere he may add important details to maps very imperfectly filled in. His most accessible and remunerative fields will be in Eastern Asia Minor and North Syria. In the mountainous districts of Asia Minor, Syria, Armenia, Kurdistan, and Western Persia, he will find also abundant ethnographic and economic work to do, especially in the observation of tribal grouping and custom, and of natural products. Throughout the great desert tracts, which make fully a third of the whole area, he will find it the easiest thing in the world to avoid the tracks of any European predecessor, and to see nomadic populations to which Western guests have never come. In Southern Arabia, if he have a stout heart, he may yet make more than one journey which offers not less of the unknown, not less long detachment from Western civilization, and withal not less personal peril, than were sought and found by the greatest pioneers of the past.

Before the paper, the PRESIDENT: The lecture of the evening is to be one of a series describing the unexplored parts of the world. I think you will not be surprised when I say it is probable that some of these lectures cannot be read at

our evening meetings, but will appear printed in our *Journal*. We hope in this way to obtain a very valuable series of articles, describing what remains to be done in the world in the way of exploration. It is, I believe, fourteen years since Mr. Hogarth lectured here, and possibly to some of us he wants reintroduction. But to those who have served on the Council and know the valuable aid he has given to us, he needs no introduction. He is a master of archæological exploration in Egypt and in Greece, and he knows a great deal about the localities which he is going to discuss to-night, and I will therefore not do any more than call upon him to deliver his lecture.

Sir THOMAS HOLDICH: I very much regret that my old friend, Colonel Wahab, is not here to-night to make his own remarks. They are not long, but you will see at once that in the main they bear out exactly those principles we have just heard from Mr. Hogarth. Colonel Wahab was engaged for some years in the delimitation of the boundary to the north of Aden, and since that very troublesome boundary has been settled, he has occupied himself in a very close examination of the questions which are before us to-night—the possibilities that may occur for further exploration in Arabia. And this is what he has to say about it—

Colonel WAHAB: "All who have travelled in, or studied the geography of, Arabia will be grateful to the lecturer for bringing the subject of its unexplored wastes before the Society. Throughout northern Arabia, that is north of a line from Jidda, passing through Taif and across Nijd to Hofuf and the gulf, the peninsula has been crossed and recrossed at intervals sufficiently close to enable us to form a fair idea of its general character. South of this line no trade or pilgrim route crosses it; few Europeans have penetrated more than 100 miles in a direct line from the coast, and these have found their way barred by the sands of the Dahna. On the east and south coasts the strip between this desert and the sea has been explored, first by the Indian Marine surveyors and more recently by Zwemer in Oman, and by Hirsch and Bent in Hadramaut; on the west Glaser and Halevy, both skilled archæologists, reached the western edge of the desert and explored the seats of ancient Sabæan and Minæan civilization in Marib and Nejrán, leaving little to be discovered by travellers under present conditions. Omitting the half-million square miles of the Dahna desert as unprofitable waste, there still remain the northern districts of Yemen, the whole of the Asir highlands, and the hinterland extending north-east to the borders of Al Hasa as a field for the geographical explorer. A route from Saná northwards to Taif would lead through one of the most interesting districts of Arabia, of which nothing is known at first hand, except from the meagre accounts given by Tamisier and other French officers of Mehemet Ali's army between 1830 and 1840. A journey through Asir and down the Wadi Dawasir to Yemáma would indeed be, as the lecturer describes it, the biggest feat left for a traveller to perform in Asia. All we know of the hydrography of this vast area is that the *wadis* of Asir, and perhaps of Nejran, drain to the north-east; but whether they unite to form the W. Dawasir, or some of them form a separate and southerly *wadi* system draining by the Wadi Yabrin to the Khor ad Duwan, or the salt marshes east of it, we cannot say.

"The difficulties and risks of such a journey are serious. The whole Red sea coast is Turkish, and British subjects have not, of late years, found travelling in Turkish possessions a safe or easy matter. The independent tribes in the interior of Asia and Northern Yemen are somewhat fanatical followers of the Imám, whose capital Sada lies in the direct road north from Sana. The British authorities would forbid any one entering from the Aden district. The only approach to this hinterland would therefore seem to be from the coast some distance to the east of Aden, and thence, as suggested by the lecturer, an explorer with local experience

might find his way to Marib and along the fringe of the desert to Nejran. Whether he could then get into relations with the Beni Kahtan and continue his journey northward, or whether he should try to work eastward along the old Sabæan trade route to Shabwa and the Hadramaut valley, must depend on the explorer's discretion. The latter alternative would no doubt help to solve some minor geographical problems, such as the upper course and source of the Hadramaut valley; but the main points of interest on the route, Marib, the Jauf, and Hadramaut, have been already examined by competent archæologists as thoroughly as present conditions of travel permit, and the geographical results would be small compared with what might be achieved on the northern route.

"As the operations in the Aden hinterland have been referred to, I would like to say that an exploring party was sent at the time from Aden towards Hadramaut, but was obliged to return after an attack by the tribes, in which the surveyor of the party was killed. Any exploration towards Marib, in territory claimed by Turkey, was out of the question while the boundary negotiations were being carried on, owing to the jealous suspicions of the Turkish officials."

That is what Colonel Wahab has to say about it, and if I could point out to you one by one the names he mentions in this paper, you would see that they coincide very fairly closely with the most important route indicated for future explorers by Mr. Hogarth. I would like to say for myself, that when I was at Muskat I heard a report that there was a direct route across the Great Desert from Muskat to Mecca, and that pilgrims from Persia made use of it. I never met any really competent authority who would justify me in stating that such a route exists. But reports like that, when they are constantly affirmed, generally have some basis of fact, and I believe that there is a route from Muskat, following the northern edge of the desert, running somewhat south of Riad, and so passing on to Mecca. This route, which is given in some maps, must be some 1100 miles in length, and it is stated that it takes twenty-one days to accomplish it. That would mean travelling at the rate of 50 miles a day. Not an impossible rate of travel in those regions, but it would certainly indicate that there must be oases and cultivated spots where water is procurable, of which we know nothing at all. I may also point out that there is in Arabia a certain amount of triangulation on which any traveller who wishes to begin an exact survey in the south-eastern portions of the desert might base his work. From the Persian coast it was carried across to Cape Mussendam, and peaks were fixed which at once brings eastern Arabia into line with the great Indian Survey. There is just one other point to notice, relative to Mr. Hogarth's concluding remarks on the subject of the use of instruments. I regard it as a very poor business indeed if a traveller can only depend on a prismatic compass survey. The results of such a survey are never very satisfactory, and I would point out that in the hands of our Indian explorers it has seldom been necessary to revert to this method. I admit that they have not been much employed within the limits of Ottoman territory, but they have been in that territory; and a great deal of the Kurd country, to say nothing of the central part of the Hadramaut valley, have been surveyed by Indian surveyors, who have used the ordinary instruments which we use in the Indian Survey with very useful results. In the Hadramaut particularly, you have seen some photographs which Mr. Hogarth has put on the screen which were taken, I think, by Mrs. Bent, which show that it is quite possible to use the camera in those regions. Where it is possible to use the camera, there, I maintain, it is possible to use instruments of a little better class than the prismatic compass; and I may mention that by the use of the plane-table, surveyors have been able to adapt themselves to circumstances in a variety of ways. It is really comparatively easy to take

plane-table observations without creating very much disturbance. If I remember right, Captain Bower, when he was crossing Tibet, used to ring a little bell in the evening to call the attention of the inhabitants of the country generally to the fact that he was going to say his prayers, and the instrument was accepted as part of his ritual. In a country which is particularly difficult to deal with, to the west of Makrán, bordering the Kurdish country (where I doubt whether any European could go), an Indian surveyor used a plane-table with great effect by combining it with a camera, and so long as he produced a few photographs at the end of his journey, he was quite safe. I would strongly recommend travellers to study the possibilities of making use of such instruments before starting. I will only conclude by expressing my cordial approbation of this lecture system of informing travellers beforehand where they are going and what they are going to do. In my own opinion, geographical work well begun and backed by such knowledge as experts like Mr. Hogarth are able to give, is work really half done.

Colonel MAUNSELL: My experience of travel in Arabia is confined to a journey down the Hejaz railway, but even this had a peculiar fascination from the strange grandeur of the scenery, the brilliant colouring of the landscape, where red, yellow, and purple were the predominant colours, and green was entirely absent. It might be possible to reach the Red sea from various points on the line, but a range of apparently volcanic origin, with a line of difficult peaks of a curiously jagged nature, would have to be crossed at the watershed. But routes certainly exist, and are travelled by the Arabs, the duration being from three to four days.

I think, undoubtedly, that the right spirit for a traveller to enter Arabia is to go as a gentleman of quality, paying a visit to the great chieftains of the interior, and it is useless to attempt disguises. It must be remembered that the great spread of Western thought throughout Asia has also reached Arabia, and the Emirs of Nejd might not be so averse to travellers visiting their country as they were formerly. In Kurdistan, the chief fascination of travel is that you may come across, in the forgotten corners of the great mountains, remnants of peoples of the past driven thither as successive tides of conquest passed by. In the Telu ranges are the Nestorian Christians of the period just before the Moslem conquest, and various settlements of Jews who had been there since the captivity. The district of Modikan, near Bitlis, would probably yield traces of Chaldean times. One great range there is named the Hormuzd Dagh, and there are strange stories of the religion and curious cave dwellings of the inhabitants. In the hills not far west of Modikan, differences are still settled by fights between men armed with swords, and protected by a leathern target. A Kurdish chief came out to visit me, attended by men with battle-axes and what resembles the lictors of ancient Rome, whose frontier fortress of Nisibis was not far distant in the plain below.

The district of Lazistan, on the Black Sea, can also be recommended to the traveller. It presents the beautifully wooded scenery common to the Black sea coast, the hills rise to some 9000 feet, and the summer climate is superb, while here also there are studies to be made in the former history of the population.

The PRESIDENT: Perhaps Mr. Bury will say a few words and tell us a little about the difficulty which he has met with in Southern Arabia in surveying and in dealing with the natives.

Mr. BURY: During the last ten years I have had occasion to go into the Aden hinterland on various work. I have got as far as the south-west corner of the Rubá el-Khali, or Empty Quarter. I have looked towards the north and north-east across 70 or 80 miles of rolling sandhills some 150 feet in height. Far across and probably about 30 miles due east of Mareb can be seen a flat-topped range of hills, known as the Hadhenah range, which are said to be of marble,

but more probably are of limestone. That marks the utmost limit I have ever seen of the Great Red Desert. I may tell you, as regards the difficulties which would be met with by an explorer in that district, that the chief of all would be the water-supply. Even the natives themselves have very hazy ideas as to where the water-holes and wells are. As a matter of fact, I believe the water-supply along the southern edge of this desert is much more plentiful than we are led by natives to suppose, owing partly to the presence of the larger fauna there, such as the white oryx and wild ass. The tribes living along the edge of the desert are of a truculent disposition, but amenable to reason. I believe it is humanly possible for a man to start on the coast, work his way up towards 15° 30′ or 16° lat. N., and then to make his way across to the Persian gulf. He would have to be guided by the season of the year, and he would get into the desert as far as he thought wells would last him.

Prof. J. L. Myres: I should like to express the satisfaction which it gives to have so full and clear an exposition of this region. A remark of the last speaker suggests that, in the map which illustrates Mr. Hogarth's paper, there is more than a superficial similarity in the distribution of comparatively well-explored areas and of the areas of large precipitation, and between the unknown areas and the areas of comparative drought. Indeed, I venture to think that the Society's cartographer has done well to employ red for the colouring of this map, and not the blue which one associates with the distribution of moisture, for really the distribution of exploration is so like that of the rainfall of the region that it was with a feeling of surprise that I found, when the map was first put into my hand, that it was not actually a rainfall diagram. To illustrate this point, I would only point out how the railway towards Mecca steers a line of compromise between the difficulties of the more mountainous region westward, and the difficulties, further east, of finding water for the locomotives.

Speaking as one who has made the geography of the past, rather than of the present, his study, I may perhaps be allowed to suggest a point of view in regard to this region. Like some of its own verbs, it has no present tense. It has a fine series of past tenses, and I believe it may have great future tenses; but in the present it is what the past has left it. It is not without reason, for example, that Mr. Hogarth took as the boundaries of his region precisely the boundaries which are assigned to Hither Asia by its first geographer, Herodotus, with his "column" of nations running from the Persian gulf to the Euxine, and his two peninsulas stretching out from it, Arabia and Asia Minor, the one with only three nations, and the other with thirty. And this ancient criterion, of relative populousness, is again in close conformity with the relative intensity of the colouring on Mr. Hogarth's map. He has had to deal in Arabia with an immense area, very ill explored; but it is one in which, from many points of view, there is not very much to know. We should not be unduly discouraged by the great blanks of light tint. In all probability the conditions which prevail round the edge of them simply increase in intensity towards the middle; and in that sense there is little probability that any great surprise awaits us in the desert interior. In the northern peninsula, on the other hand, the little regions of lighter tint are regions of unimaginable complication; regions where difficulties arise, not from absence of mankind, but from the denseness and compositeness of the population.

There are three points in which Mr. Hogarth has indicated subjects of inquiry for the student of human geography, as distinct from that of environment. In the first place, he has given us once more the prospect, based on native reports, that there exist in Southern Arabia fragments of that Negroid population which was placed there in the ethnological scheme of Herodotus; and for ethnologists such

a Negroid population is the only possible means of connecting the two great groups, eastern and western, of the black mankind of our own day. Secondly, one of the most fascinating projects for the explorer of this southern Arabia peninsula is that it has been, and is likely to remain, the fountain-head of successive Semitic emigrations; and when we consider what the world owes to the activity and thoughts of Semitic-speaking folk, their origin becomes the most fascinating problem of the whole range of human civilization. The third problem lies in those little unexplored regions to the north, for it is here that we have our only chance of discovering what the population of Asia Minor and all that great mountain region was like, before the intrusion of nomad folk from the grasslands of the south, the north-east, and the north.

I welcome particularly Mr. Hogarth's opinion that there is still a great deal to be done by that sort of explorer who is content to take a very little district and know a great deal about it. The triangulation and outline survey of great regions is of course of prime importance; but after all the three sides and the three angles of a triangle are there to enclose a space, and for a great many geographers it is rather that which lies within that space than the precise dimensions and proportions which are of interest, and I am glad to hear an explorer, with the experience of Mr. Hogarth, emphasizing the value for geographical purposes of the comparative humble traveller who will take a district and settle down there for three months, or even three weeks, and try to learn its contents from every point of view.

One last point. Mr. Hogarth has shown us how greatly our knowledge has depended in the past upon the work of explorers whose object was not geographical, but commercial, political, or military; and he mentioned one instance recently where an opportunity was missed of exploring geographically, as well as in a military sense, a fragment of the south-west corner of Arabia. I hope that among other results this series of lectures will be the means of attracting and instructing that wider circle of people which has the power, if it will, of insisting that next time anybody goes anywhere with a rifle in one hand, he shall take a theodolite in the other.

Mr. H. J. L. Beadnell: In spite of native reports—in my experience frequently untrustworthy—it does not seem at all unlikely that in the great deserts of Arabia discoveries of the first importance await us. Geologically, Arabia may be regarded as a portion of the Sahara, the Red sea having been formed by subsidence of part of the country in comparatively recent times. Although our geological knowledge is lamentably deficient, we know, from the researches of Carter and Blanford in the south, from the observations of Blunt and others in the north, that the peninsula must be considered as the eastern portion of the great Saharan desert plateau. As in the Egyptian deserts, the basis of the country consists of crystalline rocks, overlain by horizontal sedimentary formations of Cretaceous and Eocene age. Such familiar Saharan formations as the Nubian sandstone and the Nummulitic limestone are well known to have, in many respects, a very similar development in Arabia, and it is not unreasonable to assume that they to some extent beget similar physical conditions. Although the eastern portion of the Sahara—the Libyan desert—of which, after many years' exploration, I can perhaps claim to speak with some authority, is one of the most rainless regions in the world, absolutely devoid of streams and rivers, large communities are enabled to exist in the huge oases depressions of its interior by reason of the presence of the underlying sandstone charged with abundant supplies of pure artesian water. Even at the present day the four large Egyptian oases alone contain 30,000 souls, self-supporting and irrigating their lands entirely by underground water. Moreover, during the Persian domination and in Græco-Roman times these oases were of still greater importance.

When, therefore, our explorers, overcoming the existing difficulties, obtain access to the arid plateaux of the Ruba el-Khali and Nefud deserts, let them recollect the possible presence of strata containing an abundant supply of deep-seated water, and carefully look for depressions where such beds may lie within reasonable distance of the surface. Even should such depressions be found uninhabited at the present day, it is not unlikely that a careful examination will reveal traces of former occupation, in the shape of sanded-up wells, subterranean aqueducts, and ruined forts and settlements.

The PRESIDENT: Before calling on Mr. Hogarth to reply, I am sure I may, in the name of every one here present, give him a hearty vote of thanks for his extremely interesting lecture. We have often heard in this lecture-hall the fear expressed that there was no exploration left to be done, and the hope expressed that the whole world would soon be mapped. I think this lecture destroys these hopes and these fears. Mr. Hogarth's lecture will, however, tend to stimulate explorers, and to fix their minds on that part of the map to which attention should be given. There is plenty to do for the accurate observer and for the man who is ready to take his life in his hands. I will do no more than express our thanks to you, Mr. Hogarth, for your lecture.

Mr. HOGARTH: I can only thank you, ladies and gentlemen, for having listened to me so patiently. Just two words in reply by way of explanation. Colonel Maunsell, I was very glad to hear, gave some further account of certain districts which are still unexplored. Of course it would have been possible to have compiled a paper, and also a map which would have more exactly shown each particular district, however small, which has not been visited by Europeans; but it would have been impossible to have read that paper or to have conveyed its sense to you orally. As a matter of fact, even in western Asiatic Turkey, there are quantities of small districts, which, so far as we know, have not been visited, and one might therefore have made a map which would have been dotted over with little white spots. That, however, was not my intention, and therefore I took the two Kurdish regions, which seemed to me the most important among the still absolutely unvisited regions. Still, those regions to which he called your attention are also of very great interest, and I hope explorers will endeavour to gain as much more information about them as about those two of which I spoke. The only other point has regard to what Sir Thomas Holdich said about the use of instruments. It was only due to the condensing of my paper in reading that I gave the impression that nobody could use anything but a prismatic compass. What I meant to say was that, in the comparatively civilized and well-administered parts, it is, I think, difficult to use anything more elaborate. There, at any rate, you will arouse native suspicion, and have the emissaries of a comparatively civilized Government down upon you. It is one thing to set up a plane-table in a savage land, and to expect to have your observations regarded as part of your prayers; but it is quite a different thing to do that in many parts of Asia Minor, where you will generally find, at any rate, some Christian who will be quite aware of what you are doing. I was really speaking of Asia Minor more than of anything else, and I did not mean to imply that over a great part of the region it was only possible to use what, I agree with Sir Thomas Holdich, is a very unsatisfactory method of surveying. As regards Marib, Colonel Wahab seems to regard the exploration done there as more complete and more satisfactory than personally I should regard it from what I have been able to read. Glaser was there for a month under the direct protection of a number of Turkish soldiers; but the natives were hostile to him, and he himself confessed that he had by no means exhausted the possibilities of the district. For one reason or another, he never published one-half of what he actually saw there, nor

any photographs of the ruins. He is now dead, and I have not heard that there is likelihood of any more of his notes being published. Therefore one must regard that region as, from an archæological standpoint, only half explored.

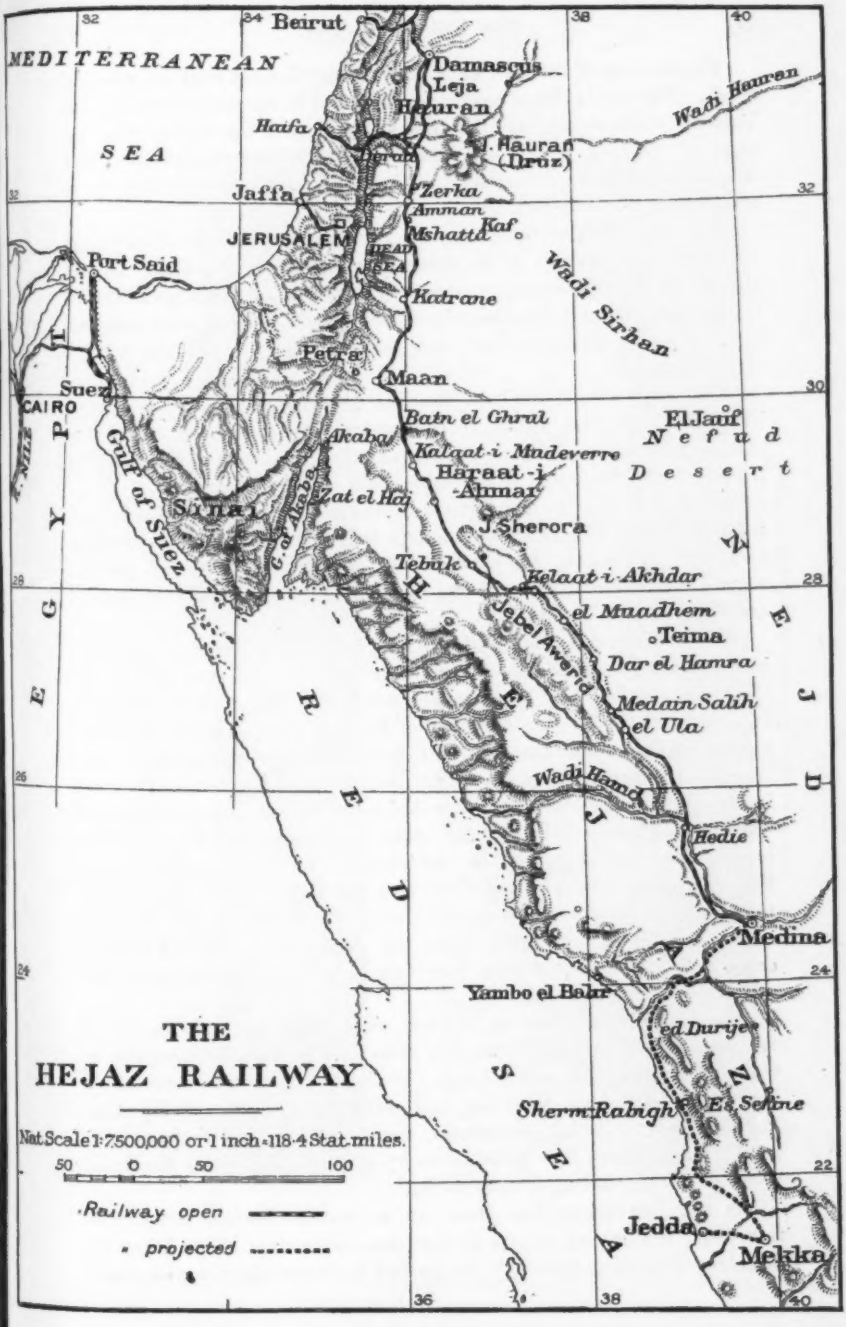
THE HEJAZ RAILWAY.

By Lieut.-Colonel F. R. MAUNSELL.

The Hejaz railway has many remarkable features which distinguish it from other lines. Its principal object is to provide a means for faithful Moslems to perform their pilgrimage to the holy places of Mecca and Medina with a greater degree of comfort than formerly. There are still many of the more rigidly orthodox who prefer the long tedious journey by camel, with its fifty-two stages from Damascus to Medina, and count the hardships involved as part of the duty of pilgrimage. The railway also has the object of binding together some outlying provinces of the empire to the centre. Its inception is due to the initiative of the present Sultan, and the enthusiasm created by its first announcement brought in subscriptions from the faithful in all parts of the Islamic world. A special stamp-tax forms a solid annual contribution to the expenses, somewhat less evanescent than other contributions may prove to be.

Geographically, the line has provided a means of travel in a country with a fascination of scenery quite peculiar to itself, and unlike any other part of the world. Instead of traversing populous countries and great cities, it seems to delight in passing through immense solitudes —through a country peopled mainly by the spirits of the Arabian Nights, where little surprise would be occasioned in finding a roc's egg in some inhospitable rocky valley, or in seeing a genie floating in a stream of thin vapour out of a magic bottle.

The line commences at the traditional parting-place of the Great Pilgrimage, the Bawaubet Allah, or Gate of Allah, and the first station is the Kadem-i-Sherif, the noble starting-place, shortened in vulgar parlance by the railway porter to Kadem. At first the line traverses the Hauran, running parallel to the French Hauran railway. From ancient times the district has been an extremely rich one, and the Romans used it as a granary. Both lines of rail find sufficient traffic, besides which the opening of the Hejaz line has been a means of opening up the trade of the Jebel Druz or Druse mountain, which sends its trade to Ezra and other small stations in that vicinity. The line, moreover, has brought general security, and the area under cultivation is increasing. From Deraa a branch runs to Haifa, on the Syrian coast, where a harbour is to be constructed. Quite a good restaurant exists at Deraa, and there is an increasing tourist traffic on this part of the route.



THE
HEJAZ RAILWAY

Nat Scale 1:7500000 or 1 inch = 118·4 Stat. miles.

50 0 50 100

Railway open ——

" projected .....

The richness of the Hauran is undoubtedly derived from its volcanic origin. Distinct layers of basalt can be traced in the side ravines of the Yarmuk, while on the east the line skirts close to the curious volcanic mass of the Leja, which has been cooled at a more recent date, and is still in the form of a wild tumbled mass of black scoriated rocks strewn some 30 to 40 feet deep.

The deep, narrow ravine of the Yarmuk, the ancient Hieroymax, which the line follows in its descent to the Jordan, present several difficulties of engineering successfully overcome. Large numbers of Italian, Montenegrin, Croatian, Greek, and other European workmen had to be employed on the difficult rock cuttings, tunnels, and viaducts of this section.

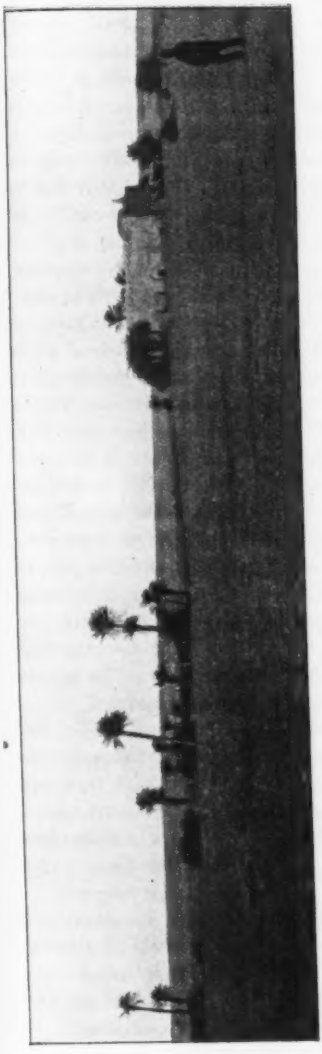
The Jordan valley, where the line crosses it, just south of Lake Tiberias, is 800 feet below Mediterranean level; but the difficulties of construction cease when the Yarmuk valley has been successfully traversed, and the ascent to the sea is made by easy gradients.

South of Deraa the main line soon leaves the richer corn land, and enters an upland undulating country, the land of Bashan, producing abundant grazing in the spring. At that season troops of gazelle roam about the country, and the Bedawin with vast herds of camels are found close to the line.

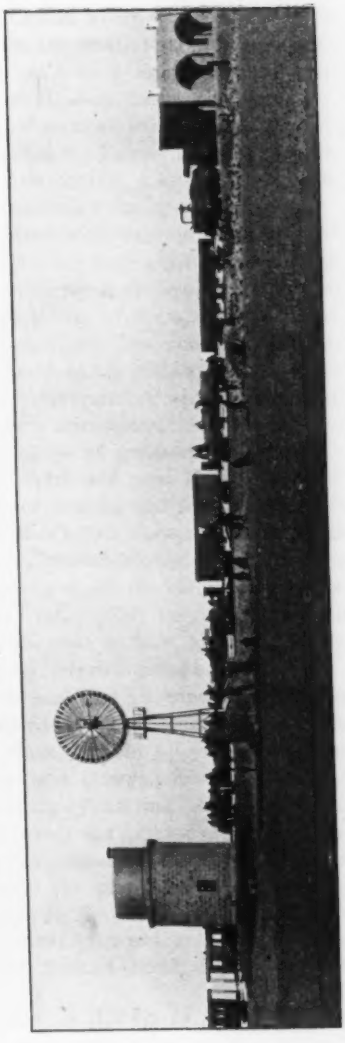
At Zerka the line descends into a long ravine in a limestone country, having a good stream in the valley. Here are reached some villages of Circassian settlers, who have worked wonders in restoring the ancient fertility of this district. The ruins of Rabboth Ammon are close to the modern station of Amman, another Circassian outpost on the line. The line winds steeply out of the valley, which follows a deep-cut ravine in its course to the Dead sea below Amman. Fertile cultivated ground continues for some miles past the ruins of Mshatta, and then the line leaves what may be called the last cornfield and plunges into Arabia Petræa. The landscape gets bleaker as the train moves south. The mountains of Moab are passed some distance to the west, and the trace is laid far out in the desert, where the valleys are wide and easy to cross, and before they deepen into narrow ravines as they enter the mountains.

The old pilgrim route is followed very closely throughout, and at the stations the stone cisterns and reservoirs to provide a supply of water to the pilgrims are noticed. Water becomes very scarce; in a few places wells have been dug, and water is raised by wind-pumps. For some reason, boring for artesian wells does not seem to have been tried. One attempt was made in rocky ground, and when the drills broke no further attempts were made.

As the line approaches Maan an extremely desolate country is traversed; low ranges appear to the east, apparently of sandstone or limestone formation, although the ground is strewn thickly with black



PILGRIM ROUTE TO MECCA, KALA OF ZAT-EL-HAJ.



HEJAZ RAILWAY: KALAAT-I-MUDEVERRE STATION.

fragments of obsidian along some sections of the line. The ravines now trend eastward to lose themselves in a wide depression in that direction, as shown in the recent maps of this country by Prof. Alois Musil. Maan is the first point since Amman where water is procurable in any quantity, either from springs in the small town itself, or from wells at the railway station. The place is a large railway, with several stone buildings for officials, a small shop for temporary repairs, a hospital, and quite a good hotel, a substantial building rather small in size. The small town, containing some good stone and mud houses, is not visible from the railway, but lies behind a hill nearly a mile off. Two copious springs supply the necessary water.

Date palms are reared, small gardens with various kinds of fruit trees, and a few fields of corn are visible, but from a little distance the place is little else than a drab patch on a grey landscape. Its principal distinction is its proximity to the rock city of Petra, a ride of some eight hours to the west among the Moab hills. The climate of Maan is invigorating both in winter and summer, as the place stands 3525 feet above sea-level, surrounded by the dry invigorating air of the desert. The principal drawback are the severe duststorms. Rain is not uncommon in the spring, and then a tinge of green spreads over the landscape. The ancient fortress of Petra and now Maan owe their importance as standing at the gate of Arabia, and forming the last outpost of Syria and Western civilization before the long dreary stages of the northern Arabian journey. For countless ages, long before the present pilgrimages, this was the route by which the gold, frankincense, and Arabian products found their way into Syria; but the Suez canal and steamer transport by the Red sea seem to have abolished all, or almost all, trade prospects, and only the pilgrims remain.

On leaving Maan it may indeed be said that all hope of dividend is left behind, and the line enters a spirit world without towns or even inhabitants. The stages south of Maan, the old pilgrim route, were the most desolate of all, and the way was always strewn by dead and dying camels as the caravan toiled along. The line crosses a constant succession of small wadis trending towards the depression mentioned as lying north-east of Maan, and some low bushes and vegetation appears.

Some 50 miles south of Maan comes the most remarkable change in the landscape, and the veritable gate of Arabia and the home of the genie is at last reached. The line arrives quite suddenly at the edge of the curious escarpment known as the Batn-el-Ghrul, or the Hollow of the Genie.

From the station of Batn-el-Ghrul, at the top of the descent, the traveller can walk to the edge of the cliff and take in the immense extent of view which unfolds itself to the south. The escarpment is visible for some 20 miles to the east, and is a sheer cliff without, it is said, a single passage of descent, and, although perhaps footpaths

could be found, this looks to be the case. For some 15 miles to the west, also, the escarpment is fairly well defined, until it merges in the high ranges overlooking the Gulf of Akaba. The pilgrim route follows the descent close alongside the line, and is comparatively easy. The principal descent is from 3207 feet at the summit to 3278 at the foot of the escarpment, or 329 feet altogether.

The view from the summit is extremely striking, and comprises a great inland depression, walled in by a continuation of the escarpment on the east, and glowing throughout in the most brilliant and striking colours. The prevailing note is bright red and yellow, changing to violet, purple, and black, so that every tint, except green, seems to be supplied. The escarpment is of sandstone, which seems to have worn away in some places to sand drifts of all colours, but principally red and yellow. The spurs of the Tel-esh-Shahim, which run out parallel to the line, are covered with glistening black rocks, at first sight volcanic, but, as I was told by an engineer, were really of sandstone blackened by the intense heat of the sun. The depression extends south as far as the gorge near Kelaat-i-Akhdar, a distance of about 120 miles.

In this clear, dry air every feature is visible. A number of isolated flat-topped hills form the Haraat-i-Ahmar about midway down the valley, and the great pinnacle of Jebel Sherora is visible near the extreme end. To the west, the watershed which divides from the Red sea is clearly traceable in a range of dark purple hills, the summits serrated in all sorts of fantastic shapes, probably due to volcanic action and without the softening influence of a rainy climate.

The railway accomplishes the descent of the escarpment in two loops, which form a clever piece of engineering, after which the Wadi Rutm, a sandy ravine about half a mile wide, flanked by two ridges of sandstone, is followed for a few miles. South of Wadi Rutm station the line enters definitely the open depression, with the escarpment still traceable in red and yellow sandstone some 20 miles to the east, and the black jagged edge of the Red sea watershed to the west. Inquiries regarding the country to the east gave it as an almost waterless region, although a route does exist from Maan to Jauf, along which some scanty wells can be found.

Towards the Red sea the district is known as el Hisme, and is said to contain a few villages, and a sufficient supply of water from small springs. At Kalaat-i-Mudeverre, the first water since Maan is obtainable from a station well with a wind-pump, and another well near the old castle on the pilgrim route about 2 miles to the west. There is little trouble on the line from sanddrifts, as a hard surface can easily be found, and rocky ground is seldom far distant below the surface.

At Zat-el-Haj a group of a few palm-trees represents the first vegetation since leaving Maan. An interesting old masonry fort commanding

COUNTRY EAST OF LINE NEAR TEBUK.

OASIS OF TEBUK, KALA OF TEBUK.

access to the well, and representing a halting-place on the pilgrim route before the railway was opened, is the only building on the landscape here. An endless series of beautiful mirages unfold themselves as the train toils slowly along these two lines of steel leading through an endless expanse of sand and rocks varied, with an occasional volcanic outcrop raising black-topped hills.

At Tebuk, 430 miles from Damascus, is the first oasis of any size, and here a depôt has been formed, at which the railway can recoup itself before another long stretch of nearly waterless desert is entered and the next depôt at El Ula reached. A group of buildings for the employés, a small repairing shop, and a hospital with sixty beds, form the principal part of the depôt.

Tebuk consists of a group of date palms about half a mile square, deriving water from a large spring, walled round in a concrete basin, and watched over by another of the masonry forts which mark a pilgrim station. Altogether there were about sixty mud houses with a few walled gardens belonging to the permanent inhabitants of Tebuk. All that were seen were of a distinctly negroid type, different to the nomad Bedouin. The surrounding country is but sparsely inhabited by Arabs of the Beni Atiye tribe here, and the Huweitat farther north. Besides date palms, there are in the gardens a few lemon trees and pomegranates, and outside are some few fields of wheat cultivated principally as green fodder. The Italian engineer in charge of this section had managed to make a garden in the sand, where by means of irrigation he grew most kinds of European vegetables, but none of the inhabitants seemed inclined to copy his example.

East of Tebuk the escarpment is about 15 miles distant, and prominent in the main ridge there is the remarkable hill of Jebel Sherora, or the Fire mountain. It has extremely steep stony slopes and a flat summit, from which a most extensive view must be obtainable over the unknown country to the east.

It seems certain that Mohamed visited Tebuk in his earlier wanderings, and tradition refers to Jebel Sherora as the Pulpit of the Prophet, probably from its commanding position overlooking all the surrounding country. To the west is still visible the dark serrated ridge which forms the watershed with the Red sea.

The rainfall in this country is extremely capricious, and perhaps two or even three years may elapse before there is any appreciable fall here, although at Maan there appears to be always some rain in the spring. Quite heavy rainfalls do sometimes occur in Tebuk, as, for instance, in 1907 some 5 feet of water flowed for a short time down the Wadi-et-Til and under the long railway bridge of twenty arches which spans it. The rainfall tends to form temporary lakes in certain wide hollows, the largest being between Tebuk and Jebel Sherora, which receives the Wadi-el-Til and Wadi Akhdar from the south,

both of them of considerable size, especially the latter, which has numerous tributaries. Other smaller wadis enter the depression from the north, and sometimes the lake remains sufficiently long to breed mosquitos in Tebuk. The water from Kalaat-i-Mudeverre and Zat-el-Haj runs into smaller depressions near those places and also evaporates under the intense heat of the sun After rain, green vegetation springs up along the wadis. In the Wadi-et-Til (or Ithil) is a fringe of low trees of a kind of tamarisk (*Tamarix articulata*). There is also a species of low acacia, and some smaller shrubs.

Of animal life there appears to be very little. An antelope which the Turks call a wild cow, but which looks to be *Oryx beatrix*, is to be found in this district, but only in small numbers. The large troops of gazelle seen north of Maan do not roam here. It is said that the ostrich is occasionally found, and the skin of one specimen is preserved in Maan station.

The desert air is extremely dry and clear, always invigorating, and even the great heat in summer is not as insupportable as in a damper climate where the thermometer is probably lower. Climate has, without doubt, a great effect on the human character and intellect, and the nervous, high-strung temperament of the Arab is to a great extent the creation of his environment of desert, with its splendid mirages to fire the imagination and sparkling air to keep the nerves always alert.

South of Tebuk the line continues over the plain until the southern edge of the depression is reached at Dar-el-Haj, where the hills close in, and after passing through a short tunnel the line enters the narrow valley of the Wadi Akbar. Construction is easy, as the gradient is gradual and the valley floor is nearly level and about half a mile wide, but bordered for most of the way by a sharp line of sandstone cliffs.

To the eastward is the volcanic mass of the Jebel Awerid, a very difficult country to traverse, and with no distinguishing peaks or features.

Want of water is again a great difficulty, and the small posts have to be supplied daily from the train. At Kelaat-i-Akhdar is a small spring, and at El Muadhem is a cistern depending on rain-supply; at both these places are the small forts which denote halting-places on the pilgrim route. At Dar-el-Hamra is reached the summit of the water-shed between the Wadi Akhdar flowing into the Tebuk depression, and another wadi, tributary to the Wadi Hamd, which flows to the Red sea.

At Medain-i-Salih the valley widens a little, and here are found some rock-cut tombs similar to those at Petra, but far fewer and less ornate. Traces of a town exist, but there is nothing now visible except the usual fort of the pilgrim. Here again, as well as at Tebuk, the site would seem a favourable one for trying artesian wells, but no

BATN-EL-GHRUL ESCARPMENT FROM THE EAST.

APPROACH TO HARAAT-I-AHMAR FROM SOUTH.

attempts have been made to prove their success or otherwise. This place and El Muadhem are the first points on the line from which routes lead eastward into the heart of Arabia. The curious town of Teima, visited by Doughty and Euting, lies east of El Muadhem, and from both places routes lead to Hail, the capital of Northern Nejd.

At El Ula the first small town is reached, a place of about 3500 inhabitants, partly negroid and partly mixed Arabs, in an oasis of palms and gardens about 4 miles long, watered by some springs.

HEJAZ RAILWAY: MAAN STATION.

Here the last depôt before Medina has been constructed, similar to Maan and Tebuk. Construction onward to Medina is not difficult, as the valleys branching north and south at the head of the Wadi Hamd can be followed even up to Medina itself. Between Medina and Mecca the line makes a westerly bend, passing through Sherm Rabigh on the Red sea, this having been found the easiest line for construction.

The permanent way has been laid throughout by Turkish soldiers; but the station buildings, all of very solid masonry, as well as bridges and culverts, of which there are a great number, have been constructed mostly by Italian workmen, with some Greeks and Montenegrins. As many as three or four hundred Italian workmen were employed at one time on the works near Tebuk, and so little did fanaticism come into play, that they built the fine new mosque at Tebuk. Subsequently they instructed some Turkish engineers, who continued the work from El Ula to the holy city itself.

It is difficult to think of this railway becoming a great highway or developing any great trade with Central Arabia, as the section from Maan to Medina traverses an unproductive country without possibility of development, and the interior of Arabia has no surplus products to dispose of. In any case, when the line reaches the sea at Sherm Rabigh, it is probable that any trade, either export or import, to Medina or Mecca will pass through that port in preference to the long land journey.

The following summary of distances shows the extent of the line:—

Damascus to Maan	... ...	285 miles.	
„ Tebuk	... ...	430	„
„ el Ula	... ...	609	„
„ Medina	... ...	820	„
„ Mecca	... ...	1097	„

The general height above sea-level is about 2300 feet, although at Maan it rises to 3525 feet, and at Dar-el-Hamra, the watershed of the Tebuk depression and the Wadi Hamd, it attains 4200 feet, which is the highest point.

The gauge of the line is the somewhat curious one of 1·05 metre (3 feet $5\frac{1}{4}$ inches), which was necessary when the line was first commenced to correspond with the gauge of the Beirut-Damascus line, over which the rolling stock had to be brought. The branch to the Mediterranean at Haifa was constructed subsequently. The rolling stock has

been obtained principally from Belgium, with the exception of the engines, which are made by a German firm. The rails were supplied by the American Steel Trust, by a French firm domiciled in Russia, and by the firm of Cockerill, in Belgium.

The engineers in charge of sections were also of various nationalities —French, Poles, Hungarians, etc.—while the guiding spirit in the construction has been Meissner Pasha, a very able German engineer. But besides these, the general direction has been under Marshal Kiazim Pasha, to whom the greatest credit is due in bringing the line successfully into Medina, and to Hajji Mukhtar Bey, a brilliant Turkish engineer who has absorbed all modern methods of construction, and completed the last section into Medina without European assistance.

In conclusion, it is difficult which to admire the most, this far-reaching conception of his Majesty the Sultan to build the line and thus to further the interests of his religion and bind together the outlying portions of his empire, or the silent unswerving devotion of the Turkish soldier who has carried the matter to a conclusion, and who watches without complaint over miles of line through a country almost without water or inhabitants.

DR. SVEN HEDIN'S EXPEDITION IN TIBET.

By Major C. H. D. RYDER, R.E.

Dr. Sven Hedin has returned from another two years spent in explorations in Tibet, and as I have had the opportunity of hearing from him a fairly full account of his work, I am sending this paper, which has been authorized by him, for publication in the *Geographical Journal*.

After a preliminary journey through Persia and Seistan, Sven Hedin arrived in India, and after overcoming rather more than the usual difficulties, left Leh on August 14, 1906, with the strongest caravan he has ever had: 25 men and 94 ponies and mules, as well as 30 ponies he hired for the first month; of the 94 ponies, only 6 completed the journey. He was accompanied by a babu Robat, who proved of much use in assisting in scientific observations, as well as Mahomed Isa, who acted as caravan bashi; this man had accompanied Younghusband in his travels, and to Lhasa, was with De Rhins when he was murdered, and was with Rawling and myself in 1905. Sven Hedin speaks in the warmest terms of the invaluable services of this man. He also constantly refers to the kindness he received from the Maharaja of Kashmir, the state officials, Sir Frank Younghusband, Captain Patterson at Leh, and others.

After leaving Leh, Sven Hedin travelled north-east over the Marsimik-la, crossed the Karakorum east of Changlung-yogma, traversed

Ling-shi-tang and Aksai-chin, crossed Deasy's, Rawling's and Wellby's routes; he then kept east and east-north-east, and turned south-east between the routes of Bower and De Rhins. On the heights of the Buka-mangna route, 9 mules were lost in one day, but to the south the country became more and more hospitable, with plenty of grass and water. After eighty-three days they met nomads for the first time; but then their black tents were visible most days, and they were able to buy yaks to replace the ponies they had lost *en route*. They left De Rhins' Ammoniac lake to the east, and continued straight south to the Bog-tsang-tsanpo, which they followed for a couple of days to get a connection with Sven Hedin's map of 1901. Turning again south-east they crossed two considerable ranges, from one of which a small portion of the Dangra-yum-tso could be seen to the south. Sven Hedin reached Ngangtse-tso on December 28, and here he was met by Hladje Tsering, governor of Nak-tsang, who had already stopped him on his previous journey, and who, though at first inclined to stop him, allowed him to continue south-east. With great good fortune, or probably with the instincts of an experienced Tibetan traveller, Sven Hedin hurried on, and, without halting, and making long marches, struck the Tsanpo 50 miles west of Shigatse, and, following down the left bank, crossed the river and reached that town late on the evening of February 9, 1907. Two days later a lama and official arrived from Devashong; they had received orders to stop Sven Hedin at Ngangtse-tso. Not finding him there, they had followed him to Shigatse; but it was now too late, Sven Hedin had reached that town and accomplished one of the objects of his journey.

The most important geographical discoveries on this journey were (1) the discovery of a very high and complicated mountain system, and (2) south of it the Mu-chu, which joins the Raga-tsanpo; the latter is the smaller of the two, and most of the water which joins the Tsanpo just west of Pindzo-ling comes from the Mu-chu. The discovery of the high mountain system set Sven Hedin thinking, and it very soon struck him that this must be a continuation of the Nien-chen-tang-la range south of Tengri Nor, the highest peak of which I fixed from near Lhasa at 23,900 feet. The Khalamba-la, on the road from Shigatse to Tengri Nor, is also on this range. Thus was forged the first link in what Sven Hedin regards as his greatest discovery.

Sven Hedin stayed one and a half months at Shigatse, during which time he made great friends with the Tashi Lama, and constantly visited the Tashi-lunpo monastery. Although so close to Gyantze, he did not think it advisable to visit Captain O'Connor there, but speaks in the warmest tones of the kindness he received from that officer. After much difficulty he obtained permission to go up the Raga-tsanpo route, and, turning northwards, recrossed the main range by the Chang-la Pod-la pass, thus fixing another 50 miles of the range. His next objective was

the Dangra-yum-tso, discovered by Nain Singh; but when within two marches, and in sight of the lake, he was stopped by a force from Shan-sa Dzong and forced to go down south to Raga-tasam, but he was able to fix the position of Targo-gangri, Targo-tsanpo, and Sershik-gunpa, all three heard of but not visited by Nain Singh. The Shuru-tso was also discovered, a rather big lake at the northern foot of the main range, another 60 miles of which being also fixed, as the range had to be once more crossed. At Raga-tasam Sven Hedin touched our route for the first time since leaving Shigatse. Dangra-yum-tso is much too big on Nain Singh's map; and his Mun-tso, two small lakes, are situated not south but west of the southern Dangra-yum-tso. The latter lake, and Targo-gangri, which Sven Hedin describes as one of the most magnificent snow-mountains with glaciers he has ever seen in Tibet, are both holy, and form the same combination as Mansarowar and Kailas in the west, and Nam-tso and Nien-chen-tang-la in the east. Sershik-gunpo is inhabited by monks of the Pombo (non-orthodox) sect. From Raga Sven Hedin went to Saka-dzong; needless to say, not by the route followed by our party, but round the north side of the beautiful snows of Chamo-uchong. At Saka Mahomed Isa died, to the great grief of Sven Hedin and his followers, and to all those to whom he has been of such assistance in the Tibetan explorations.

Sven Hedin again wished to strike north, but could not get permission to do this, although he sent messengers to Lhasa. He, however, turned north from Saka Dzong up a western tributary of the Chaktak (called Charta on our maps) Tsanpo, behind the hills north of our route to Tradom. He then kept south of the river, touching our route at Lak-tsang, and marching up the main branch of the Brahmaputra to its source, which he located accurately and surveyed. In the *R.G.S. Journal*, vol. 38, p. 146, Nain Singh mentions being in sight of the gigantic glaciers which give rise to the Brahmaputra. On our journey we surveyed, though only roughly, the main branch; but as Sven Hedin was the first to actually follow the main branch to its source, we obtain a survey much more accurate than mine, which was only a distant sketch. Crossing the watershed, which is very low, Sven Hedin proceeded to the Mansarowar lake, where he spent some weeks making careful soundings. Owing to dangerous gales, it was impossible to sound the Rakas Tal, but both lakes were carefully surveyed. Following down the bed of the old outlet, Sven Hedin found several springs, which probably are underground channels from the lake. There was no sign of these when Rawling and I were there in December; but as the Rakas Tal was then frozen over, doubtless the springs were also frozen. This, however, proves that the lakes are still connected, though underground, with the Sutlej system. After an interesting circumambulation of the holy peak of Kailas, Sven Hedin managed to get permission to go north, where he discovered the source of the

northern or main branch of the Indus, returning *viâ* Yumba-matsen to Gartok.

The gap of 300 miles in his exploration of the main range north of the Tsanpo called Sven Hedin for yet another long journey. All attempts to go north-east from Gartok failing, he decided to make a long *détour* and come into the unexplored country from the north. He gave out that he was going to Khotan, in the mean time arranging for an entirely new caravan, with new men, to be organized at Leh. He met his new caravan at Durguh, and left that place on December 4, 1907. Several caravans from Yarkand were used, the members of which advised Sven Hedin to wait till the spring. However, although winter had set in, he passed on. At Burtse he discovered that, owing to the stupidity of his headman, only a supply of eight days' corn for the ponies was left. It was not till at the crossing of the Dapsang that he gave orders to turn due east, leaving the Karakorum pass to the north. On January 11 they camped on the shore of the Aksai-chin lake. By January 18, a quarter of the caravan ponies had died, and the cold was intense. To improve matters a storm arose, which lasted for weeks; the caravan, however, pushed forward steadily, but very slowly. On the northern shore of the Shemen-tso they were nearly snowed up, no meat was left, and the ponies shared the men's rice rations. On February 8 the first hunters were met with, after sixty-four days' loneliness, and they were able to buy sheep, milk, and butter. Here Sven Hedin burnt all his European clothes, and appeared as a Ladkhi; this entailed blacking his face and hands every morning, and forbade washing. Passing the Lemchung-tso, they now entered unknown country. On February 24 three ponies and seven mules only were left, a quarter of the caravan. On the 29th they reached Lumburringmo-tso, where nomads were met with; these men, although at first suspicious of the presence of a European, soon made friends and sold twelve sheep to carry loads. For several days the storm was so bad that a move was impossible. On March 7 Sven Hedin camped on a river flowing to the south-west, but frozen over.

On March 16 they pitched camp on the Tong-tso, and turned south leaving the beautiful Gangri Shakang-sham to the east, and crossed two small passes. They here heard that Karma-Pun-tso, the governor of the Bongba province, was near, but they avoided him, and proceeded through a labyrinth of mountains, crossing the Kang-shan-tsanpo, Chaklam-la, Sangchen-chu, Sangchen-la, and Ladung-la. On April 1 Sven Hedin crossed the Satsot-la, and came down to the Chunit-tso, following its western shore for one day. Here a large salt caravan was met with coming from Tabié-tsaka, from whence most of Central and Eastern Tibet obtain their supply of salt. Still keeping straight south, Sven Hedin crossed the Nima-lung-la, and reached the district of Kemar. From here, once more, he was in sight of the range north of the Tsanpo, a beautiful sight of great snow-fields and glaciers. He

now turned south-east, having the magnificent Hlunpo-gangri on his right, and for six days followed the big river Buptsang-tsanpo up to the Samye-la, a pass in the main range. It was here that the name Trans-Himalaya struck him as most suitable for this range. Although Tibetan names are obtainable for every conspicuous peak in this range, the Tibetans have no name for the whole range, and I therefore think the name proposed by Sven Hedin should be accepted. Until Sven Hedin has had time to work out his observations and plot his map, it would be advisable to postpone any discussion as to the extension of this range east and west; but Sven Hedin has very thoroughly explored it throughout that region marked "Unexplored," on the R.G.S. map of Tibet, and there is no possible doubt that the range exists, and is the watershed between the Brahmaputra on the south and the lake region on the north.

Sven Hedin now carried out a thorough exploration of the Chaktak (called Charta on our maps) Tsanpo; however, near Raga he was met by Tibetan soldiers, and considered it advisable to reveal himself. He at once became great friends with the Tibetans, who allowed him once more to select his own route. It was arranged that Abdul Karim, his headman, should go with the main caravan *viâ* the Samye-la, to meet him again at the Buptsang-tsanpo, while Sven Hedin himself, accompanied by only five men, left his Saka friends on May 6, 1908, and went straight north, to what he describes as the most interesting of his crossings of the Trans-Himalaya range.

By the Gyegong-la he crossed the Kanchung-gangri range, which is not the head range, but broken through by the Chaktak-tsanpo. In the Lapchung-tso, situated to the north of this range, many rivulets coming from the main range collect and form the headwaters of the river. On May 12 Sven Hedin crossed the Sangmo-bertik-la surrounded by glaciers, and the Soma-tsanpo, which he describes as the biggest river in the interior of Tibet, emptying itself into the Teri-nam-tso. On May 19, after crossing the Teta-la, a most brilliant view unfolded itself of the whole Teri-nam-tso, Trans-Himalaya range, Targo-gangri, and Shakang-sham, the latter a particularly magnificent mountain. The lake has been almost correctly placed by Nain Singh, although only from native reports; but his Ngangon-tso nobody had heard of. Two days' march took them to the western end, and following the Soma-tsanpo past Mendong-gunpa, they crossed the Goa-la, and leaving the little Karong-tso to their left, struck one of the great salt roads leading from Raga to Tabié-tsaka. Chunit-tso was left to the right, and a junction should have been made with the main caravan on the Buptsang-tsanpo, in Bongba-kebyang; the caravan, however, had disappeared. On June 5 Sven Hedin said good-bye to his escort and followed the river down to where it joins the Tarok-tso. He was not allowed to visit the great salt depression of Tabié-tsaka, but turned

west, past the Lunkar-gunpa, crossing the Nyapchu-tsanpo, flowing from the Men-la in the Trans-Himalaya range to the Poru-tso. West of this lake they crossed the ice and snow-covered Sur-la range to Rigi-changma, then down the Pedang-tsanpo, a big river, to Shobo-tso. From the Tayep-parva-la one can see nearly the whole of the Nganglaring-tso (wrongly called Chalaring-tso on the map), on which there are five islands, but no monasteries on them as marked on the map. The shape is also wrong, as its length is from east to west, not north to south. They skirted this big salt lake for two days, and reached Selipuk on June 26. Here Sven Hedin was received with the greatest hospitality by the lamas, and, the main caravan rejoining him, he made his way south-west to Tokchen, crossing the Trans-Himalaya range for the tenth time by two passes, Ding-la and Surnye-la. Sven Hedin had at last had enough of Tibet, and he made his way down the Sutlej to Simla, keeping, however, while in Tibetan territory somewhat north of our route.

The geographical results of his journey may be summed up as follows:—

(1) The discovery and careful exploration of the Trans-Himalaya range, and the filling in of the large white space on our maps north of the Brahmaputra from Gartok to Shigatse, and the discovery of the provinces of Bongba and Chokcu, which he has been the first to discover, that of Dokthol, on the map, not being in existence.

(2) The discovery and exploration of the source of the main branch of the Indus.

These, I believe, are two absolutely new and most valuable discoveries.

(3) Sven Hedin also visited and surveyed the true source of the Brahmaputra. This, however, had been approximately located, I think, by Nain Singh, and fairly well surveyed by Rawling and myself, though Sven Hedin having actually visited the real source, his map will be more accurate. I hope this paper, written in a great hurry, may give the readers of the *Geographical Journal* some small idea of the value of Sven Hedin's discoveries and the treat in store for them when he delivers his lecture. He has brought back with him innumerable observations and maps, which will enable him to draw a map of the whole of Tibet and Turkestan on the 1 : 1,000,000 scale. Some years must elapse before his scientific report and results can be published, but they should exceed in interest those of his 1899–1902 journeys. In the mean time he will publish as soon as possible a popular account of his travels.

Sven Hedin is not responsible for any opinions expressed in this paper.

THE SWEDISH MAGELLANIC EXPEDITION: PRELIMINARY REPORT.

By CARL SKOTTSBERG, D.Sc., Leader.

IV. Explorations in the Patagonian Channels between the Straits and the Gulf of Peñas.

In the original plan, presented to the Royal Geographical Society in Stockholm, I put the limit of our exploration of the Patagonian channels more to the south, for the only reason that I never thought it possible for us to extend our work as far as to the Gulf of Peñas. But as the Chilean Government, with great generosity, offered us the transport vessel *Meteoro*, of 650 tons, during one month, we resolved to reach the gulf. Mr. T. Hall, during this expedition, occupied himself with palæontological researches near Rio Grand (Tierra del Fuego) and on the Brunswick peninsula, where Darwin, on Mount Tarn, make the first discovery of Cretaceous fossils.

At our request Captain José Bordes, of the Chilean Navy, accompanied the expedition. Captain Bordes has great experience of the imperfectly known — partly not even mapped — channels, and his presence was of very great value to us. On May 21 we sailed from Punta Arenas. We first paid an interesting visit to the famous Evangelistas rocks, where stands the important lighthouse at the entrance of the straits. These barren rocks are almost inaccessible, and landing is very difficult, even after several days of calm weather. Situated far to the west, this station was important for the geological survey. After a short investigation of the lately mapped Queen Adelaide archipelago, we followed the track along the channels Smyth, Sarmiento, Wide, and Messier, up to the Gulf of Peñas, where we entered Baker inlet. On our way south we paid a visit to the system of channels west of Messier, explored by a German Government Survey in 1882, and also entered Peel inlet, where, in the south arm, we discovered a splendid harbour, called Port Témpanos, after the numerous icefloes carried there by the tidal currents from the extensive glaciers in the inlet.

We reached Punta Arenas on June 27. During all the time landings were made every day in order to get a complete chain of observations of the geological structure of a vast territory, as well as of the gradual changing of the vegetation. Special care was taken to bring us in contact with all the natives met with during the voyage. I only give the following remarks upon the result of the journey.

Anthropological and Ethnographical Observations.

One of the principal objects was to study the Patagonian "Canoe Indians," mentioned by all travellers in the channels. As is well known, the southernmost part of South America is, or at least was,

inhabited by three different native tribes—the Onas on the main island of Tierra del Fuego, the Yaghans in the Beagle channel and round Cape Horn, and the Alakaloufs (this is entirely wrong; they call themselves "Álookooloop," cf. Fitzroy's "Alakoolip") in the Magellan straits and the Patagonian channels. The Yaghans have been monographed in the excellent work published by the French Expedition in 1882–83 ('Mission Scientifique du Cap Horn'). This study was made when the Yaghans still lived in complete liberty. I hardly believe that there is one single family now living in freedom, but the last remnants of the interesting people are collected at the English Evangelical Mission, formerly in Tekeenika, where we visited it on board the *Antarctic* in 1902, now moved to Navarin island; some few individuals I saw at the Catholic Mission on Dawson island. We have thus come to the interesting result of having representatives of the two great branches of Christianity amongst the few members of a dying race, but I doubt very much whether they should be able to discuss the creed. . . .

The Ona people, considered to be related to the Chuelches of Patagonia, and differing much from the Canoe Indians, have been studied by Nordenskjöld in 1895, and by the staff of the *Antarctic* in 1902, when I myself made their acquaintance; and lately Dr. R. Lehmann-Nietsche in La Plata, the well-known anthropologist, has lived amongst them, and is now preparing a complete monograph. The third tribe of "Fuegians," together with the Yaghans generally called "Canoe Indians" by the English, and here called "Álookooloop," lives in the channels between the Magellan straits and the Peñas gulf. In the straits very few of them are seen nowadays, some few families pulling down to Port Gallant to sell their otter-skins to an Austrian, who is married to an Indian woman and lives there, or even reaching Otway through the Gerome channel. (Concerning the journey in Skyring, see my former article in this *Journal*.) From the Smyth channel northward the Canoes become more numerous, and we had good opportunities of studying the natives on land or sea, building their huts, repairing their boats, and collecting their food along the beach; inviting them on board, sometimes several families at a time, we made observations on their habits and manners. These Indians have never been visited by any mission, and therefore have kept their old customs. Still they have had some contact with "civilization" in the form of sailors and sealers, people often without conscience or morals—at least, to judge from the result of their influence upon the natives; they have given them liquors and conferred their diseases upon them, making them a miserable lot of beggars instead of a strong race, fit to struggle with a most unfriendly nature and endure the most terrible hardships from their early youth to their grave. We met many an unhappy subject, degenerated with syphilis or consumption, the two prevalent diseases now killing many of the Indians, rapidly

reducing their number. In our voyage we counted some eighty—and I suppose they altogether reach the number of three hundred, or perhaps a little more, not to rely on some doubtful information on "many Indians" living in the channels south-west of the Peñas gulf. We did not see one single Canoe during our short stay in this part.

The Álookooloop are generally considered to be very closely related to the Yaghans. It was thus of importance to try to obtain anthropological measurements also from the former race, and to this object Prof. Retzius, in Stockholm, kindly provided the expedition with modern instruments. It, however, proved very difficult to carry out the work. The glittering steel machines frightened the ignorant natives, and often not even the eloquent persuasion of our old female interpreter could remove their firm belief that we intended to do them harm or even kill them right away. Especially I remember an old stupid cacique in Port Grappler, who, seeing the sharp-pointed edges of the anthropometer directed against his chest, fled in great terror, and strictly prohibited all his people to enter the laboratory, thus spoiling what could have been a good piece of work. We managed to get complete measurements of twelve individuals of both sexes.

It is very astonishing that two tribes having the same aspect and customs, living in the same region and not separated by any natural obstacles, should have their languages so entirely different as the Yaghans and Álookooloops, not one word being the same. As the language of the former people had been skilfully studied by the French, and I wanted very much to collect some materials in order to compare the two, I tried to pick up, from the interpreter who followed us the whole trip, as much as possible of her native tongue. I had, however, to confine myself to a small vocabulary of more important words. It was very difficult, not to say impossible, to get an idea of the grammar, all depending upon Akichakwarrakwiltee's (this word means "the great water," the name of the place from where the interpreter came; persons are often called in that manner) imperfect knowledge of the Spanish, the neutral ground upon which our spirits met.

In the French monograph Dr. Hyades also publishes a list of words, obtained from two Álookooloop women, who for some time resided in Orange bay. I was greatly astonished to discover that our interpreter did not understand one single word of this list. I hardly believe the author to be so mistaken or misled, that the pronunciation or meaning of the words should be completely incorrect, and for the present I must believe that there has been once some third tongue talked in some part of the region, because I am convinced that it is neither Yaghan nor the language used in the channels from the straits to the north, and only gradually changing a little as to form a southern and a northern dialect.

By means of giving the natives bread, clothing, and some tobacco,

but never liquors, we could bring together a good collection, including canoes, huts, weapons, clothing, and ornaments, household articles, etc. Most of the Indians seem to have given up the use of bow and arrows, and only use harpoons and lassos of different sizes.

Botany.—The branch of my botanical studies favoured in this voyage was naturally the phytogeography, and seldom has anybody had such a splendid opportunity as I had to follow the development and gradual changing of the subantarctic flora. With great certainty I am able to tell where the first northern elements appear and where they begin to gain ground, in such a manner that the forest loses its subantarctic character. This change takes place in the south part of the Peñas gulf, where *Nothofagus Dombeyi* replaces *N. betuloides*.

In Peel inlet I could continue the studies I started in Skyring water in order to survey the influence of the glaciers upon the vegetation in their immediate vicinity, and came to the same conclusions. The investigation of the marine flora gave as principal result, that the natural associations I have tried to distinguish in the Falklands and Tierra del Fuego, during this expedition and in 1902, keep their character as far north as we have travelled, though getting considerably poorer in species in the channel region.

Geology.—Mr. Quensel, later on, will give an account of the geological structure of the west Cordillera after he has visited certain parts not reached in the voyage referred to above.

THE TRIBES OF NORTH-WESTERN SE-CHUAN.*

We publish in the present number a map showing the routes of journeys in North-Western Se-chuan carried out in 1906 and 1907 by Mr. W. N. Fergusson, one of the British and Foreign Bible Society's agents stationed at Ch'êng-tu. Of the two journeys, that carried out in 1907 (July and August) was the more extended. Mr. Fergusson took plane-table observations over a route which, starting and ending at Kuan Hsien, covered 625 miles of rough country, part of which, so far as is known, had never previously been traversed by any European.

This country, lying to the west of the upper Min river, is occupied by a number of independent or semi-independent tribes, who greatly resent being described either as Fantze, *i.e.* rebels, a term which finds place on some English maps, or as Mantze, *i.e.* barbarians, the term usually applied to the tribes by the Chinese. The exercise of Chinese authority is mainly confined to the Ta-chin and Hsiao-chin valleys. Mr. Fergusson describes the country occupied by the tribes as one of the most picturesque that he has ever traversed. Its extent is about 250 miles from north to south and 350 miles from east to west. A

* Map, p. 648.

rough estimate gives the size of the scattered population as about a million. The country is drained by rivers and mountain torrents running in every direction of the compass, though the general trend is east and south. There are several prominent peaks crowned with snow all the year round, whose glittering tops can clearly be seen from Ch'êng-tu on a fine day. Highest of all is a peak called by the Chinese Ta-shueh-shan, or the "Great Snow mountain," the height of which Mr. Fergusson estimates to be at least 25,000 feet. Intervening between this mountain and Ch'êng-tu, which lies about 100 miles to the south-east, are the Nuteo and Balang ranges, which, at the passes over which the Mon-gung road winds its way, are from 13,000 to 15,000 feet in height, with peaks rising from 1000 to 2000 feet higher. For the most part the country is well wooded, many of the trees measuring from 4 to 5 feet in diameter, and springing up as straight as a whipstock to a height of over 100 feet.

The territory of one of the tribes, named Wa-shih, comes quite close to Kuan Hsien, but it is difficult of access, being on the opposite side of the Min river, and so wild in character that the borderland is practically uninhabited. As the traveller works his way from Kuan Hsien up the left or east bank of the Min, it is not until he approaches Wên-ch'uan that he gets the first glimpse, on the opposite side of the river, of the stone walls and flat roofs which signify the presence of a people with different habits and modes of living from the Chinese. On the left bank the houses are not so pronouncedly Tibetan in character, but appear to be semi-Chinese. The inhabitants, however, have not the same features as the Chinese, and have a free-and-easy manner with travellers; they are not unfriendly, but preserve a very independent attitude. On this, the left side of the river, the people go by the name of Changming, which Mr. Fergusson interprets as meaning the western or aboriginal tribes. They have long been subject to the Chinese, speak the Chinese language as well as a language of their own, and have adopted many Chinese customs and habits, though retaining their independent bearing. They live in considerable numbers along the left bank of the Min as far north as Mao Chou, and about 5000 families are also to be found among the mountain ranges to the north of Wei Chou.

The Changming, however, are quite distinct from the semi-independent tribes west of the river. Mr. Fergusson enumerates eighteen little states, of which the most populous and influential at the present time seems to be that called Soma, occupying the north-east corner of the country. Various suggestions as to the origin of these tribes have been put forward. By some writers they are regarded as a branch of the Tibetans, others identify them with the aboriginal population, others with the Miao tribes, and others with the Lolos. In 1903 Mr. Fergusson made the acquaintance of the prince, or Tu-ssu, of

Wa-shih, while the latter was on his way to Peking to pay tribute. The acquaintance was renewed in 1906 and 1907, when Mr. Fergusson visited the Tu-ssu's home at Tong-ling-shan, and from this chief an interesting account of the history of his people was obtained. Mr. Fergusson sends us the story in the Tu-ssu's own words—

"About six hundred years ago the Changming were very strong in this part of the country, and the Chinese could not drive them out. At that time our people lived in Tsang-peh (northern Tibet and Chinese Turkestan), and the Chinese invited us to come down and attack the Changming from the rear, while they attacked from the Chinese side. Formerly, when oppressed by the Chinese troops the Changming would retreat into the mountains, and the Chinese could not follow them because of the difficult fords and mountain passes. We came down 6000 strong, for we loved fighting. We came in the back way so that the Changming had to defend their back and front borders at the same time, and after some years of fighting they were overcome. Their chiefs were all slain, and the people who were spared promised to obey China, and they settled east of the Min, while the country they formerly possessed, west of the Min, was given to us. In it we settled, and in time, as we grew stronger, we divided up into tribes or kingdoms. At one time we had forty-eight kingdoms, and we were very strong. Then the Chinese began to get afraid of us, and sent their armies to fight with us. We had many fierce battles; sometimes we were victorious, sometimes the Chinese. Finally, in the time of Kien Lung, the Chinese overpowered us, because we did not all fight together, and they took from us the Hsiao-chin and Ta-chin valleys. This was the most fertile part of our country. The Chinese began to dig and carry off our gold, which grieved us very much. Many battles were fought, but we were not strong enough to drive the Chinese out.

"At first we all spoke one language, but some of our people, being separated by great mountains, got to speaking different dialects. We can all understand one another, but some of our local dialects are very difficult. . . . We are all one family, however. My sister is the wife of the Tu-ssu of Muping; the Tu-ssu of Somo is my cousin; . . . and so it goes on. The daughter of one prince marries the son of another, and as some of the princes have as many as seven wives, they may be connected with many states."

Throughout his journeyings among the tribes, Mr. Fergusson found this story confirmed by all who professed to know anything about the history of the country, and he concludes that the people are descended from the Hors, or Turks, of Northern Tibet. They are not Tibetans, nor do they wish to be called such. Their features are different, and so is their language. They have mixed much with the Tibetans, and have adopted many of their manners and customs, as well as their written language, which has been brought in by the lamas. In the

spoken language many words have been borrowed from the same source, but the majority have no connection with Tibetan. Lamaism has gained a strong hold over the tribes, but it is a form of lamaism impregnated with the nature worship of the formerly prevailing Sakta religion, and in some places the old black temples still attract worshippers, especially in the western states, Ba-ti and Ba-wang.

MAP OF PART OF NORTH-WEST RHODESIA.*

The map given in the present number is a reduction from one compiled by Captain C. W. D. Lynch, on the scale of 8 miles to the inch, a tracing of which has been kindly sent us by that officer. It is based on route-maps made with prismatic compass, the distances being, in most cases, taken by cyclometer. It appears that, while many of the routes are his own, Captain Lynch has availed himself of other material in the hands of the authorities of North-West Rhodesia, as may be inferred from the large amount of detail inserted over the whole area, which could hardly have been obtained by one individual. He seems, however, to have inserted only such parts of the river courses as have been touched by recent surveys. In order, therefore, to distinguish the precise details for which he is responsible, we have inserted these only in continuous lines, the other portions of the rivers being shown by broken lines, which do not, however, necessarily imply that these parts have not been seen by other travellers.

Although the broad features of the hydrography of this part of the Zambezi basin have been known from the work of Capello and Ivens, Captain Quicke (of Major Gibbons' expedition), Mr. G. Grey, Colonel Colin Harding, and others, the present map will be found to supply more detailed information respecting the courses of the rivers than any previously published. Captain Lynch does not state whether he has made any use of positions determined astronomically, and it has therefore seemed best to adjust his map to the points along the Congo-Zambezi watershed, determined with much care by Major Lemaire during his expedition of 1898–99. On a small reduction of his original map Captain Lynch shows his own route from the Kabompo-Zambezi junction to Kasempa, thence north to the Mombese, and west to the junction of the western Lunga with the Kabompo. This journey has permitted the mapping of the Dongue river, which joins the Kabompo in 24°, but has been but vaguely shown in former maps, and of a considerable portion of the Mombese and middle Kabompo. A good deal of the latter river is omitted from Captain Lynch's map, though we believe that it was descended from its source to its mouth by

* Map, p. 648.

Colonel Colin Harding on one of his many journeys in this region. This traveller seems, however, to have passed rapidly down without effecting any survey.

For the spelling of the names we have followed Captain Lynch's map, and a good many variations from the orthography of previous maps will be noticed. Thus the Dongue has previously appeared as "Zongwe," the Mombese as "Mumbeshe," or "Mombeji," the Lifupa as "Lufupa," and so forth. In such cases it is, of course, quite impossible for those unacquainted with the country to pronounce which is the more correct form. Captain Lynch has purposely omitted the names of native villages, as the sites of these are changed periodically. The map is intended primarily as a representation of the river-system, and especially of the distribution of the streams between the basins of the Kabompo and Kafue.

DR. STEIN'S EXPEDITION IN CENTRAL ASIA.*

By M. A. STEIN.

AFTER six weeks of constant toil, I had by the end of July completed at Khotan the sorting and packing of my archæological collections—a task needing much care, in view of the long journey awaiting them to India and England. Shortly before I had been rejoined by my energetic surveyor Rai Lal Singh, who, after carrying his plane-table survey along the foot of the Tien-shan from Aksu to Kashgar, had subsequently, in spite of great difficulties from flooded streams in the mountains and the summer heat in the barren outer hills, succeeded in mapping the last portions of *terra incognita* on the southern slopes of the Kwen-lun range west of Khotan. On August 1, my heavy convoy of antiques, making up fifty camel-loads (including thirty cases with ancient manuscripts and other records), could be safely despatched to the foot of the Kara-korum, where it was to await me, while I myself, with Rai Lal Singh, started on my long-planned expedition to the sources of the Yurung-kash, or Khotan river. My explorations of 1900 and 1906 had shown me that the true headwaters of the river, confined in deep-cut gorges between high glacier-crowned ranges, were quite inaccessible from the west, where the river has cut its way towards the plain through the rock-bound valley of Karanghu-tagh. I had therefore decided to make a fresh effort from the east, where that wholly unexplored mountain region adjoins the extreme north-west of the high Tibetan tableland. In view of the great difficulties which climate and ground were sure to offer in that inhospitable region, the preparations for this expedition had cost much care and trouble; but for these

* Communication from Dr. M. A. Stein, dated "Leh, October 24, 1908."

the complete success attending our undertaking offered ample reward in the end.

After making our way through the difficult gorges of Polu to the northernmost high plateau (*circ.* 15,000 feet above sea), we turned to the west and succeeded in reaching the deep-cut valley of Zailik, which drains into the Yurung-kash. Here we found extensive gold-pits dug into the precipitous cliffs above the stream, and evidently worked since long ages. They had never been visited by Europeans, and the reticent hillmen of Polu, who so far acted as guides, had done their best to keep us away from the valley. Its discovery proved to us of great value. Terribly rugged and confined as the valley of Zailik is, we managed to ascend from it a series of high spurs coming down straight from the main Kwen-lun range northward, and by establishing survey stations close under its crest-line (which here shows an average of 20,000 feet above sea) to map with theodolite, plane-table, and photographic panoramas the greater portion of the wild mountain region containing the Yurung-kash headwaters. On the south, for a distance of over 60 miles, they proved to be flanked by a magnificent range of snowy peaks rising to over 23,000 feet, and clad with glaciers more extensive than any I had so far seen in the Kwen-lun.

The mines of Zailik, accessible only during a few summer months, are now almost deserted. Yet we managed to secure, among the small groups of miners still toiling in this desolate gorge, that number of carriers without which it would have been impossible to transport our baggage, much reduced as it was, over the difficult marches before us. By crossing a succession of side spurs over passes 17,000 to 18,000 feet high, and subsequently ascending the extremely confined gorge of the main river, we reached, after eight trying marches from Zailik, the great glacier-bound basin (*circ.* 16,000 feet above the sea), in which the easternmost and largest branch of the river takes its rise. The track we followed was that of wild yaks, and in many places impracticable even for our hardy donkeys, and the crossing of the glacier-fed side streams often dangerous in spite of the advanced season. But excellent survey stations could be climbed *en route* at heights from 18,000 to 19,000 feet, and the opportunities they offered were utilized to the full for survey as well as photographic work. The formation of these rugged mountains and valleys offered abundant geographical and geological interest. A very striking feature was the considerable reduction which the extent of the ice-covered area had evidently undergone during relatively recent times. This observation has its quasi-antiquarian importance, as it helps to explain the contraction which has undoubtedly taken place during historical times in the area irrigated from the Yurung-kash river down below in the Khotan oasis.

Having thus traced the great river to its ice-bound head, we turned east to high but far easier ground on the Aksai-chin plateau, where we

rejoined our depôt of spare transport and stores. The object now to be accomplished was to follow the great snowy range which we had discovered flanking the Yurung-kash headwaters on the south-east and south, along its southern slopes westwards, until we reached the valley of the Kara-kash river. For this purpose it was necessary at first to follow the route which leads from Polu towards the Lanak-la pass and Ladak. This took us to the uppermost valley of the Keriya river, and past the line of great glaciers which form its true sources. It was interesting here to ascertain that the range from which these glaciers descend is identical with the easternmost part of the great range confining the Yurung-kash drainage. Ever since we had reached the head of the latter very trying weather had pursued us. Frequent snowstorms swept across the high plateaus and valleys, and the slush they deposited soon converted the gentle slopes of detritus into veritable bogs, very difficult to cross for laden animals already suffering from the effects of great altitude and exposure.

At last we left behind the watershed of the Keriya river, and could commence our exploration of the hitherto unsurveyed ground westwards. The area before us, which in extant maps had generally figured as a high plain under the designation of Aksai-chin desert, proved soon of a very different character. High snow-covered spurs with broad valleys between them were found to descend here from the great range flanking the Yurung-kash. The streams brought down by these valleys reach but rarely the series of large lakes and marshes extending at the foot of those spurs; in most cases they lose themselves on vast alluvial fans of detritus above the depressions which connect those lakes and marshes. The direction of these depressions, which all bear signs of having been ancient lake-beds, running from east to west, greatly facilitated our progress. But their increasing barrenness told heavily on our animals, of which, in spite of all care, we lost nearly one-third in the end. Vegetation almost completely disappeared after one march from the first lake, and soon fresh water, too, ceased to be obtainable except by digging wells in dry watercourses.

After a week of long marches from where we had left the Polu-Ladak route, we reached a large salt lake which an Indian survey party appears to have sighted more than forty years ago from a distance, but which has now been reduced to the state of a mostly dry salt marsh. Continuing our journey to the north-west of it over plateaus 15,000 to 16,000 feet above the sea and absolutely sterile, we struck, after three more trying marches, the traces of the old route by which Haji Habibullah, ruler of Khotan at the commencement of the last Turkestan rebellion, had endeavoured to establish direct communication between Ladak and his kingdom. This route, which was followed also by Mr. Johnson on his adventurous visit to Khotan in 1866, had been in use only for a couple of years, and is now completely forgotten. Yet such is the

dryness of the climate in these barren mountains that we found the cairns and other road marks, the fuel stacks and other relics left behind by those early travellers, almost intact. Following these traces and crossing several side spurs of the main range to the north, we emerged at last, on September 18, in the valley of the easternmost feeder of the Karakash. Next day I was joined by a party of Kirghiz with yaks, whom I had ordered from Khotan to await here our arrival.

It only remained now to trace Haji Habibullah's route up to the point where it crossed the high Kwen-lun range. Moving up the side valley which the line of cairns indicated, we found at its head that advancing masses of ice and snow had obliterated all trace of the old route. It was necessary, however, to fix our position accurately with reference to our former surveys from the north side of the main range. So on September 22 I ascended, with Rai Lal Singh and some Kirghiz, a steep glacier pass which seemed to offer the nearest approach to the watershed. The ascent, over miles of ice and *névé* covered with fresh snow, proved very tiring, and it was late when we reached the watershed at an elevation of over 20,000 feet. The fine view here enjoyed showed that we stood at the head of one of the great glaciers descending from the main range towards the valley of Nissa as surveyed in 1906. Mapping and photo work delayed our descent, and when at last camp was reached late in the evening, I found that my feet had in parts severely suffered from frostbite.

It was fortunate that our tasks were now completed, for I soon realized the urgency of proper medical treatment. Moving down the Kara-kash valley, I had the satisfaction of seeing my heavy caravan of antiques safely arrived at the foot of the Kara-korum. Rai Sahib Lal Singh had, during the preceding weeks of trying work, displayed zeal, energy, and readiness to face hardships such as I had never seen equalled by any Indian, and had succeeded since our start from Khotan in mapping no less than 17,000 square miles of mountainous ground. He now took charge of my heavy and valuable convoy, while I moved ahead towards Leh as rapidly as the condition of the passes and my improvised litter would permit. After nine long marches I arrived at the first Ladak village, where Dr. Schmitt, of the Moravian Mission, Leh, kindly met me. After four more days I reached Leh, where he could perform the operation necessary on the toes of the right foot, and where, through his kindness and that of his fellow-missionaries, I was soon provided with civilized comforts. My archæological collections are now on their way to India, where, after a fortnight's enforced rest, I hope soon to follow them.

THE RECENT CRINOIDS AND THEIR RELATION TO SEA AND LAND.*

By AUSTIN HOBART CLARK.

ALTHOUGH long known as an important group from a palæontological standpoint, it was not until the publication of Dr. P. H. Carpenter's two monographs in the *Challenger* reports in 1884 and 1888 that the crinoids were accorded their rightful position as one of the most important classes of marine invertebrates inhabiting the recent seas, a position unique among the creatures of the sea in its relation to questions of geography and thalassography, as well as to geology. Crinoids, as a class, are probably the most strictly sessile of all marine organisms; many of them are stalked and cannot move, and those forms in which the stalk is partially or entirely lost in adult life probably move but very seldom, and not at all unless under strong compulsion. Their free-swimming larval period (so far as we know) is of short duration; the larva soon sinks to the bottom, and becomes fixed. The depth at which most of them live renders them secure from the influence of surface currents; hence we should be able to learn much of value from their distribution upon the sea bottom which we could not gather from the history of any other group. There is no record of crinoid larvæ, other than those of littoral species, having been taken at or near the surface, though I have taken the post-larval stages of ophiuroids and asteroids from shrimps in the Bering sea, caught at the surface over depths of several hundred fathoms. The asteroids and ophiuroids are bottom animals, but the occurrence of their young, in considerable numbers, at the surface indicates a power of dispersal quite unattainable by the crinoids. The extraordinary development of an inorganic skeleton within the crinoid body renders it peculiarly susceptible to preservation as a fossil, hence their great geological importance, an importance which, considering the class as a whole, is increased by the fact that, so far as we know, there are no soft-bodied forms among them.

Geographically and bathymetrically, the recent crinoids fall into three well-marked faunæ, as follows:—

1. *Indo-Pacific Japanese*, extending from East Africa (Madagascar to the Red sea) eastward, including the southern shores of Asia and all the coasts of Australia, the South sea islands generally, and thence northward to southern Japan. Hawaii, the Galapagos islands, and the Pacific coast of South America are not included. The characteristic species are almost all, at least among the unstalked forms, littoral or shallow-water types; they include all the species of Zygometridæ and Himerometridæ; the species of the genera *Comatula*, *Phanogenia*, and most of those of *Comaster* of the Comasteridæ; *Ptilometra*, *Asterometra*, *Calometra*, and one of the two species of *Tropiometra* of the Tropiometridæ; and the species of *Perometra*, *Nanometra*, *Compsometra*, *Thysanometra*, and *Iridometra* of the Antedonidæ. Among the stalked crinoids *Metacrinus*, *Carpenterocrinus*, *Hypalocrinus*, and *Phrynocrinus* are only known from this region.

2. *Oceanic*, a well-differentiated offshoot from the preceding, and occurring everywhere with it and thence over the entire ocean area, except that it is never found with the succeeding; it inhabits deep water only, from approximately 400 to 2900 fathoms.

Characteristic of this fauna are the species of *Thalassometra* having rounded

---

* The names used throughout this article will be found explained in the author's paper on "The Nomenclature of the Recent Crinoids," *Proc. U.S. National Museum*, vol. 34, pp. 435–542.

and spiny rays and arm bases (such as *T. bispinosa*, *T. villosa*, *T. gigantea*, *T. pubescens*, *T. aster*, *T. echinata*, and *T. multispina*), and certain other species such as *T. flava*, *T. porrecta*, and *T. magnicirra*, *Stylometra*, *Bathymetra*, and *Charitometra*, except the *aculeata*, *hepburniana*, *basicurva*, and *tuberosa* groups; of stalked forms *Rhizocrinus*, *Endoxocrinus*, and the species of *Bathycrinus* except the *B. carpenterii* group belong here. The crinoids of Hawaii and the Galapagos, all from deep water, are members of this division, as are also those of the West Indies, though a few from the last-mentioned locality suggest affinities which it is not worth while to discuss here.

3. *Polar-Pacific*, embracing the Arctic and Antarctic seas, and the entire Pacific coast of North and South America; in the Atlantic this fauna extends southward to near the Hebrides and the Faroë channel, and to Halifax; in the Pacific it includes the Okhotsk and Japanese seas, and the eastern coast of Japan to Tokyo bay. The Polar-Pacific area is divisible into two well-marked sections, the *Arctic*, including the Arctic regions and the North Atlantic, and the Okhotsk and Japanese seas; and the *Antarctic*, including the Antarctic regions, and the eastern, northern (including Bering sea), and north-western Pacific, but not entering the seas of Okhotsk or Japan.

The unstalked crinoids occurring here belong exclusively to the Antedonidæ; *Heliometra* occurs everywhere; *Thaumatometra* and *Isometra* are found in the Antarctic section only, and *Hathrometra* only in the Arctic. Bathymetrically, the species inhabit moderate or comparatively shallow water toward each pole, but dip downward to a few hundred fathoms when passing under the tropics. The species of *Bathycrinus* of the *B. carpenterii* group (*B. carpenterii*, *B. complanatus*, and *B. australis*) have a distribution suggesting an intimate connection with this faunal division, while the same may be said of *Calamocrinus* and *Ptilocrinus*.

These zoogeographic areas, outlined by the most sessile of all marine organisms, have a certain value as showing the primary distribution of life upon the sea-floor, with the minimum of secondary influences, such as ocean currents and the like. A comparison of the distribution of the crinoids with that of the sea-urchins, the star-fish, and the brittle-stars, shows the difference between practically sessile organisms, and related forms with a free-swimming period of more or less duration, and which are, therefore, more or less susceptible to the influence of currents and other marine phenomena. A careful comparison between the distribution of the deep-sea echinoderms will probably throw considerable light on the question of the deep currents of the ocean areas.

The bathymetric distribution of the crinoids, particularly in relation to their size, and the local distribution of certain species, both geographical and bathymetrical, offer many points of very considerable interest.

It has long been known, in regard to *Antedon bifida* of the coasts of Europe, that specimens taken in deep water are larger than those taken in shallow water, but no plausible reason has been shown for this phenomenon. It has been suggested that the coldness of the deeper water may stimulate it to greater development; but specimens from different localities, taken at a considerable difference in depth but with the same bottom temperature, will vary greatly, those from the greater depth averaging much the larger; similarly, specimens from the same depth, but with a considerable difference in the bottom temperature, will be found to be of practically the same size. Specimens from very shallow water are usually about 120 millimetres in expanse, and from deep water about 220 millimetres, or nearly twice as large, so there must be some factor of great importance brought to bear.

The food of crinoids consists of very small pelagic organisms and minute crustacea; at or near the surface a crinoid must depend upon those which swim

within reach of its pinnules, or which it may intercept by the slow motion of its arms, but in deeper water, while this source of supply is just as available as at the surface, the crinoid gets, in addition, all the carcases of those which die in the upper levels and fall to the bottom. The intensity of this rain of food increases, of course, proportionately with the depth, so that the deeper a crinoid lives, the greater is the available food-supply; consequently, the better nourished is the individual, and the greater is its size.

The increase in size, proportionate with increase in depth noticed in *Antedon bifida*, therefore appears to be in correlation with the increase in its food supply, and to be a direct result of it. Passing from a single species to a consideration of the group as a whole, it is found that (excluding the large littoral species of the tropics) the average size gradually increases from the shore-line to about the 100-fathom mark; this is plainly due to the increase in the food-supply, as just explained: from 100 fathoms to about 600 fathoms the same size is maintained; but below 100 fathoms plant life, and with it the host of small organisms upon which (as well as upon certain of the minute plants) crinoids are dependant for food, begins to disappear. This gradual disappearance of vegetable organisms is offset by the gradual increase in the rain of carcases from above, so that an equilibrium is maintained down to about 600 fathoms, and hence the size of the crinoids remains practically stationary from the 100 to the 600 fathom line. Below 600 fathoms the gradual decomposition of the rain of carcases progressively lessens its food value, and, therefore, a decrease in the size of the crinoids is noticed, scarcely perceptible at first, but soon becoming more marked, until, below 2000 fathoms, we find only the minute comatulid *Bathymetra*, and the equally tiny *Bathycrinus*, and *Hyocrinus*.

By this hypothesis, the general absence of the recent pentacrinites above 100 fathoms is at once explained. The stalked pentacrinites are animals of very considerable size; besides a bulky crown they have a large stem which must be nourished, and the organisms found at or near the surface of the sea are not sufficient; it is not until a depth of approximately 100 fathoms is reached that the organisms in the water about them, plus the cumulative effect of the rain of dead from above, acquires sufficient intensity to admit of their existence. Incidentally their remarkable uniformity in size is also explained, for the pentacrinites inhabit almost exclusively the 100–600 fathom zone, which has just been shown to be a zone of uniform crinoid size. A species of *Endoxocrinus*, *E. wyville-thomsoni*, and the peculiar *Hypalocrinus* both descend to over 1000 fathoms; but both are much smaller than their relatives above the 600-fathom line.

The common Arctic comatulid *Heliometra glacialis* (= *eschrichtii*) occurs from east of the Kara sea westward to west of Greenland, thence southward to Nova Scotia; the southern part of the sea of Okhotsk, and the northern part of the sea of Japan, I found to be inhabited by a variety, *maxima*, differing only in its great size from Arctic specimens. This species varies greatly throughout its wide range; north of Europe it is small, though rather larger around Spitzbergen; off Halifax, and on the Grand Banks, it reaches a comparatively large size; while off the western coast of Greenland it attains a diameter of 500 millimeters or more, reaching upwards of 700 millimeters in the Okhotsk and Japan seas. The west coast of Greenland abounds in fjords which are continually giving off fresh-water ice, which floats off, melting as it goes, thereby killing millions of small organisms which are unable to endure a great change in the salinity of the medium they inhabit; these organisms fall to the bottom, and furnish an abundant supply of food for the crinoids there, which consequently are enabled to attain very considerable dimensions. In the Kara and Barents seas there is no such supply of fresh water at hand, hence the

crinoids are small; but Spitzbergen, through its snowfields, resulting in the freshening of the water about it, allows the crinoids about its shores to reach a larger size than those of the Barents and Kara seas, though they are not nearly so large as are those from West Greenland.

On the Grand Banks, the Gulf Stream brushes by, and mixes more or less with, the cold northern current; this is fatal to the delicate southern life it contains, which is thereby killed and precipitated to the crinoids below; they, therefore, in spite of their living on the southernmost limit of the territory inhabited by the species, are as large as, or larger than, specimens from Spitzbergen.

The Kuro-Shiwo, or Japanese current, sends off a branch through the Korean straits which washes the eastern shores of the Sea of Japan, and in its northern part, from the straits of Tsugaru to the straits of La Pérouse, mingles with the very cold water from the Okhotsk sea. The mixing is very gradual, and extends over a very considerable territory, and over all this area the crinoids are of gigantic size, bearing witness to their enormous food supply. Now this colony of *Heliometra glacialis* var. *maxima*, a purely Arctic species, surrounded in the Pacific by widely different forms, and finding close relatives no nearer than the Kara sea, might be supposed, in the course of the centuries which have elapsed since the Okhotsk sea was a part of the Arctic ocean, to have become rather widely differentiated from the parent stock, and to have attained a very large adult size from some other cause than food-supply; fortunately, we are able to make some observations on other species bearing directly upon the point. In this area *Heliometra* is found where the bottom temperature is very low, about freezing, or below; but, dovetailed into these cold areas are others where the bottom temperature is 40° Fahr., or above, at the same depth. These warmer areas are inhabited by an entirely different fauna, and we find in them entirely different crinoids, belonging to the purely Pacific genera *Thaumatometra* and *Psathyrometra*. It is gratifying to note that the representatives of both these genera are far larger here than anywhere else, the difference, in fact, being relatively greater in both these genera than in *Heliometra*; the three genera are living at the same depth, but at different temperatures and among entirely different surroundings, but their food-supply, coming in a rain from above, is the same, and is, moreover, the only common ecological factor; therefore there is no room for doubt that the food-supply is the cause of the great increase in size.

While the recent pentacrinites as a rule live below 100 fathoms, in certain places, such as in some localities along the northern coasts of Cuba and Guadeloupe, off Amboina, and in Suruga gulf and Sagami bay, Japan, they approach much nearer the surface, having been taken in from 20 to 30 fathoms (Guadeloupe). Now Cuba Guadeloupe, and Amboina, are mountainous islands, while Sagami bay and Suruga gulf are close to that magnificent mountain Fuji-yama, and to other high land as well. The result is that many intermittent streams flow into the sea at these places, having their origin in the high lands, and the rise in the volume of the fresh water is so sudden that the pelagic life cannot give way before it, but is killed and precipitated. The greatly increased food supply in the vicinity of one of these streams thus brings the food intensity up to such a level, that the large pentacrinites may exist in such localities in much shallower water than would otherwise be possible. The water from these streams is never very great in amount, and does not penetrate deeply, but spreads out over the surface of the sea; thus a crinoid could exist very near the surface without being at all affected by it. The large rivers, on the other hand, freshen the entire sea for a great distance from their mouth, and thus render crinoid life impossible.

Within the tropics, particularly in the East Indies, very large comatulids belonging to the families Tropiometridæ, Zygometridæ, Himerometridæ, and

Comasteridæ occur abundantly in very shallow water, often just below the low-tide mark. Moreover, these decrease in size with depth. This would appear to directly contradict the conclusions reached in the case of *Antedon bifida*, but in reality entirely different factors are involved. Within the tropics the intense sunshine causes rapid evaporation from the surface of the sea, especially where the water is somewhat shallow, and a consequent mortality among the more delicate organisms; the beaches and rocky shores at low tide warm up, to be covered again at high tide with comparatively cool water, full of organisms unable to stand a great change of temperature, which are therefore killed and swept back into the sea, to fall just beyond the low-tide mark. Periods of intense sunshine are relieved by torrential rains, which are just as fatal in their effect on small pelagic life. But torrential rains are associated with mountainous districts; a glance at the distribution of the species of these four families shows that all the large species, and practically all the small ones, occur exclusively about mountainous islands, or near high mainland, and they are particularly abundant along the shores of the larger East Indian islands. On isolated coral reefs and about the shores of low coral islands, where, owing to the low altitude of what little land there is, the rainfall is very small, these large littoral crinoids are quite absent.

The beautiful and brilliant coloration of the crinoids has often been remarked; so striking is the common European species, *Antedon bifida*, that it has been the subject of more coloured plates than any other echinoderm; Heusinger, Gosse, Dalyell, Dujardin, and Dujardin and Hupé have figured it in its natural hues; but the larger tropical species are much more varied and handsome, and are, for the diversity of their colours and the delicacy of their markings, unrivalled among the marine invertebrates. But the rapidity with which the colours fade after death has made it difficult for one not acquainted with the animals in their native habitat to understand them, as the only coloured plates of exotic species are those of Dr. W. E. Leach and Kuhl and van Hassett, of the comatulids, and Filhol and Alexander Agassiz of the stalked forms. There are, however, numerous records published of the colours in life, and a study of these brings out certain facts of considerable interest. In addition to these published records, I have been so fortunate as to have studied in life nearly one hundred species belonging to nearly all the known genera.

All colours are found in the crinoids, except blue, though black is confined to the disks of the Pentametrocrinidæ, and to lines and spots on two species of *Coccometra* from the West Indies; blue and black, however, enter commonly into combination.

Crinoid colours may be grouped as follows:—

$$\text{I. Yellow} \begin{cases} + [a.\ \text{blue}] = \begin{cases} \alpha.\ \text{white.} \\ \beta.\ \text{green.} \end{cases} \\ + [b.\ \text{black}] = \gamma.\ \text{brown.} \end{cases}$$

$$\text{II. Red} \begin{cases} + [a.\ \text{blue}] = \begin{cases} \alpha.\ \text{purple.} \\ \beta.\ \text{violet.} \end{cases} \\ + [b.\ \text{black}] = \gamma.\ \text{crimson.} \end{cases}$$

Yellow is the colour of all the more primitive forms and many of the more specialized throughout life, and is the colour of small specimens and of pentacrinoid young of comatulids, with very few exceptions. It probably represents the absence of colour in the group, as it does in the parrots, where the albinos are yellow instead of white as in other birds.

Red, in reality an intensification of the yellow, is the colour of all young which are not yellow.

The black factor in coloration is merely the result of age, and nothing more; all

full-grown crinoids become dusky, sometimes to so great a degree as to obscure the original colour, except members of certain genera which are always and invariably clear yellow.

The blue factor is absent from all crinoids living below 150 to 200 fathoms, but, in the group as a whole, gradually increases in amount from that point to the surface; the first effect of blue is shown in whites and purples, which, as it becomes more intense, change to greens and violets.

Many crinoids exhibit the two basic colours, red or yellow, only; others exhibit these only, but may have more or less of an admixture of black. All crinoids below the limit of light penetration belong to one or other of these classes; thus the deep-sea forms are yellow, brown, red, or crimson. Of the shallower-water species, some are fundamentally yellow, some fundamentally red; the former will be found white, green, brown, or yellow; the latter purple (which may deepen to a dark maroon) violet (which may be almost blue), crimson, or red.

Some shallow-water species, such as *Antedon bifida*, are some specimens yellow, others red, from the earliest manifestations of colour. These when adult will be white, green, brown, or yellow, or any combination of these, or purple, violet, crimson, or red, alone or in any combination.

While this explains the coloration of all crinoids starting from an entirely yellow or entirely red base, certain forms are mosaics, that is, have primarily a mixture of both bases. These mosaics are of two classes; in the first, though both bases are found in the same species, they never occur together; specimens are always either fundamentally red, or fundamentally yellow; *Tropiometra afra*, occurring either yellow or violet, is an example; in the second, both bases occur in the same individual, which is therefore parti-coloured, as *Tropiometra carinata*, which is violet, with yellow blotches of greater or less extent; the latter class, however, always exhibits a tendency toward the former arrangement.

Their analysis of the coloration explains the wide range of hues found in these animals; they appear to be merely the result of light, which introduces a blue factor, on a pigment primarily yellow, more rarely red, plus the effect of the age factor, black. Not only the crinoids, but all the echinoderms appear to obey this law.

A short sketch has been given of the more obvious relations of the crinoids to the ocean currents, to light, to fresh water, and to land areas. Much more might be said; but it is sufficient for the purpose of this paper to show the apparent intimate connection between this strictly marine and almost wholly deep-water group, and geography, in the hope that this line of study, by which many geological problems may be elucidated, will in the future be followed by those interested in the marine invertebrates.

NEW INSTRUMENTS FOR TRAVELLERS AND SURVEYORS.

By E. A. REEVES, F.R.A.S.

THE following is a brief description of three instruments I have recently designed for the use of travellers and surveyors.

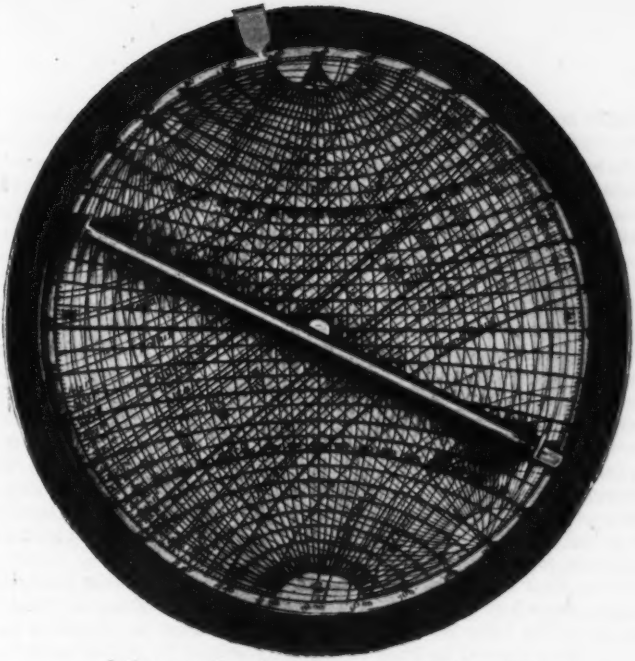
1. *The Distance-finder Alidade for a Plane-table.*—This is a light and portable form of the distance-finder described in the *Geographical Journal* for April, 1908, arranged so as to serve the purpose of a telescopic plane-table alidade as well as for finding distances. It consists of an aluminium ruler, 2½ feet long, at each end of which is fitted a small telescope placed at right angles to the ruler. One telescope

has a vertical and horizontal wire only, fitted in the diaphragm, while the other, in addition to these, has a movable micrometer wire and drum. In taking a distance the plane-table with the alidade is carefully levelled, and then the telescope with the simple cross-wire is sighted on to a definite point of an accessible or inaccessible object of which the distance is required, after which the surveyor passes to the other telescope, and covering the same point of the object with the movable micrometer wire, he reads off the divisions recorded on the micrometer. To eliminate errors in parallelism, the measurement is repeated with the alidade and telescopes reversed, and the mean of the divisions noted. With this mean a scale on the alidade ruler is entered and the corresponding distance in feet read off. A 2½-feet instrument will give direct distance up to about 1200 feet with fair accuracy. By a simple system of similar triangles, distances eight or ten times as far can be measured with very fair accuracy without altering the position of the plane-table. The whole operation is very rapid, and the great advantages of the instrument are that it enables a surveyor to fill in a considerable amount of detail without moving his board, and that he can obtain distances to points which he may be unable to reach. The telescopes can be taken off the ruler, and one of them is fitted with a small circular arc and can be placed in a line with the ruler, when the instrument is used as an ordinary telescopic plane-table alidade.

2. *The Astronomical Compass and Time Indicator.*—This is a simple and inexpensive little instrument for quickly finding the north-and-south line and the true bearing of any object, as well as the local mean time by the sun or stars with sufficient accuracy for all ordinary purposes. It has been designed by me to meet the requirements of travellers, and for night-marching, when the ordinary magnetic compass cannot be relied on, as well as to serve as a ready means of checking bearings taken with that instrument.

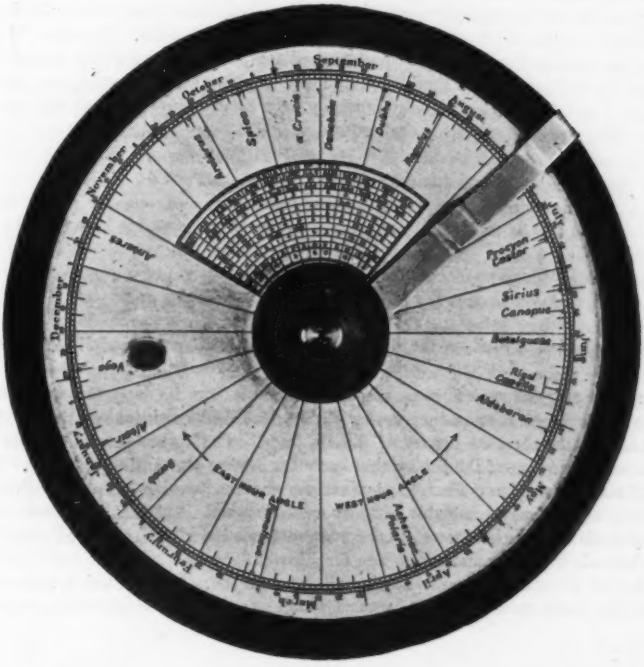
It consists of two small discs, upon each of which is a projection of a hemisphere drawn on the plane of the meridian. One of the discs shows, in black, parallels of declination of the principal stars and of the sun at different dates, with hour circles subdivided into five minutes, while the other, the upper one, is transparent, and shows, in red, curves of altitude and azimuth. The two discs are centred on a pivot, and the transparent one is weighted at the lower part to keep it vertical. Through the central pivot passes a pin carrying a sight-rule, or alidade, on the front of the transparent disc, and fixed to the handle at the back.

When the instrument is used as a *compass*, the north or south pole of the declination circle is first set to the red number on the transparent disc equal to the latitude of the place; then, allowing the discs to swing freely, clamped together, a rough altitude of the sun or star is taken by means of the sight-rule. The altitude circle indicated by the pointer at one end of the sight-rule is now followed across the disc until it intersects the curve of declination of the sun or star observed, seen through the transparent disc, and the red longitudinal curve passing through the point of intersection gives the true bearing, or azimuth, at the time. Then, considering the upper disc as a compass-card with the zenith as the true north point, the sight-rule is set to this bearing, counting the degrees round the circumference of the disc. When the discs are now held horizontal with the sight-rule aligned on the sun or star observed, the true north will be indicated by the large red arrow on the transparent disc. There is an additional movable pointer, which can be previously set to any bearing upon which it is desired to march. The lines are all bold, so that they can be read off easily at night. The whole operation is extremely rapid, and bearings at intervals of about twenty minutes or half an hour can be taken without any considerable delay; or, if preferred, after having taken one bearing before starting on a march, the change of



On the compass the vertical and horizontal curves are shown in red.

Front.



Back.

REEVES'S ASTRONOMICAL COMPASS AND TIME INDICATOR.

bearing for every half-hour or so afterwards can be marked on the compass, and the alidade set to these marks as the times arrive.

The same observation that gives the true bearing also furnishes *the time*, since the hours and minutes read off the black figures of the declination disc at the point of intersection indicate the hour-angle of the sun or star. This hour angle, of course, in the case of the sun, gives the local apparent time, which can be converted into mean time by applying the equation of time taken from the table at the back, where a diagram is also given, from which the approximate local mean time can be quickly found, without any computation, from the hour-angle of a star taken off, as in the case of the sun.

3. The third instrument is a new form of reflecting *artificial horizon*. It is intended for land or sea use, and, it is hoped, will be of service in polar exploration on moving ice. The special advantages claimed for it over other attempts at the same kind of instrument are (1) that by the system of taking observations, errors are counterbalanced and a good mean obtained. (2) That it can be readily fitted on in front of a sextant when required for use, and afterwards taken off. (3) That no arrangement is required for illuminating wires for star work. Meridian altitude latitudes on land have been frequently taken with this artificial horizon to within 8″ or 10″ of the truth, and on sea the results should in ordinary weather be near enough to be quite useful.

This artificial horizon is very simple in construction, consisting merely of a reflecting mirror kept horizontal by a short weighted pendulum, of which the weight is slightly below the centre of gravity. The mirror is adjusted to move accurately in the plane of the index and horizon glasses of the sextant by means of adjusting screws, and altitudes are taken in pairs, the artificial horizon being reversed laterally after each observation, and the mean result accepted. This is a special feature in connection with the instrument, and to a great extent eliminates errors. A mean of two or three pairs should give a good result. To reduce vibration, the weighted part of the pendulum oscillates in a small receptacle containing glycerine or other suitable liquid. It is not necessary that the image, seen in the artificial horizon, should be perfectly steady, as a mean of its vibrations will suffice for a fairly accurate result, if taken carefully.

REVIEWS.

EUROPE.

English Tin Mining.

'The Stannaries. A Study of the English Tin Miner.' By George Randall Lewis, PH.D. London: Constable & Co. 1908. *Price* 6*s. net.*

The first two chapters of this monograph on the tin industry are most important geographically, as they deal with the technical conditions of tin mining, past and present, and the history of the tin trade. The author gives a number of instances in support of the theory that early tin mining was entirely alluvial. He mentions the wooden tools used by ancient and mediæval miners, and gives a striking example of a complaint made by a landowner in 1361 that the tinners had deluged his land with water so that corn would not grow, an undoubted reference to wholesale trenching and excavating for alluvial deposits.

As the stream tin became nearly exhausted in the sixteenth and seventeenth centuries, shafts were sunk, the depth of which was limited, owing to the primitive

character of mining machinery. Water presented, then as now, the great difficulty of deep mining.

The author traces the gradual development of tin smelting, from the days of the old "Jews' houses," with their primitive furnaces, fed by charcoal, to the perfected methods of the present day. He points out, however, that there is still enormous wastage in the tin industry in this country, and that much work is still being carried on with antiquated machinery, possibly owing to the fact that so many small mines are only worked when the price of tin seems likely to render the labour profitable.

The geographical distribution of tin mining shows that the scene of operations steadily shifted from east to west, Penzance only becoming a coinage town in 1663.

During the Elizabethan period the "craft of Pewterers" monopolized the export of tin, keeping their position largely as a result of the scrupulous purity which they maintained. The final blow to the British monopoly was given by the Dutch importation of cheaper tin from the East Indies. Tin, however, remained one of the most important of British exports down to a later period. For a long time tin was mainly distributed by foreign ships, Marseilles, Bordeaux, Cologne, Bruges, and Italian ports all forming centres of the market; but by the middle of the seventeenth century English carriers had practically displaced foreigners in the export of tin.

A. W. A.

The Rhine.

'The Rhine: its Valley and History.' By H. J. Mackinder. *With Illustrations in Colour after Mrs. James Jardine.* London: Chatto & Windus. 1908. Pp. v. and 226. *Maps. Price* 20*s.*

This is a sumptuous volume, in which the illustrations, in the now popular three-colour process, are evidently intended to form a noteworthy feature; and it may be said at once that they do so. The excellence of some of them, within the limitations of the process, could hardly be surpassed, though others (notably some of the winter scenes) are less successful. But Mr. Mackinder's name as author is a guarantee that the text is not (as it sometimes is in books of this character) an appendage to the pictures. His usual admirable choice of words and clarity of phrase is present throughout this detailed physical description of the great river. He traces it from source to mouth, annotating the passage with a study of the leading physiographical features of its valley and banks, and especially demarcating very clearly the strong physical distinction between the several great divisions of the valley. Moreover, there is a description of the places of importance along the river, and their station in history is pointed out, as is that of the river itself; and no one is better qualified than the author for such a historical study. It may be regretted that the book has apparently been passed somewhat hurriedly through the press. Certain errors in the titling of the plates have to be acknowledged; the spelling of place-names in the text and on the plates and maps has by no means been co-ordinated, and such a form as "Basle" should not have escaped emendation. The two coloured maps are in Bartholomew's most excellent style of the coloured-contour system; this system is essential to the proper physical illustration of the Rhine valley, and the maps are one of the most valuable features of an interesting book.

AFRICA.

Tuat.

'A la frontière du Maroc. Les Oasis Sahariennes (Gourara-Touat-Tidikelt).' Par A. G. P. Martin. Tome 1, avec 12 gravures et 1 carte. Alger, Edition de l'Imprimerie algérienne, 1908. *Price* 6 *fr.* 50.

Since Gerhard Rohlfs first visited Tuat in 1864 much has been done, chiefly by French officers, to make that region of the Sahara better known. In 1900, Tuat, Gurara, and Tidikelt, *Les oasis Sahariennes*, as they are officially styled, were occupied by France, and Mons. G. B. M. Flamand and other scientists have published studies on the geology, hydrography, meteorology, and other aspects of the "archipelago." A serviceable monograph on the oases by Commdt. E. Laquière appeared in 1902. Now, after eight years of French rule, we get another study of the region. M. Martin has spent four years in Tuat—and spent them to good purpose. In the book under notice he divides his subject into two parts: (*a*) history, and (*b*) an "economic inventory." In the manner now usual (and excellent), his historical study is prefixed by a brief description of the physical characteristics of the Sahara in general and the oases in particular. Incidentally he laments that by *une fantaisie inexpliquée* the name "Adrar" has been adopted as the official style of the French headquarters, "Adrar" being the name of half a dozen *ksur* (fortified hamlets) in the archipelago, and the Adrar in question being but one of twenty villages in the district of Timmi. M. Martin explains that Tuat and its neighbours, though directly south of Algeria, remained so long outside the Algerian orbit because of geographical obstacles. They lie south of the Grand Erg, and communicate naturally by the wadis Ghir and Zusfana with Morocco. It is with that country that the history of the oases is largely concerned. The historical section (which begins with geological ages) appears well informed, and is clearly told, but for political reasons the Filali period (1504–1900) is left at present in manuscript. The inventory section is full of information concerning the peoples, their racial characteristics, food, dress, and dwellings, the water supply, the administration, the animal and mineral productions, the commerce, and the industries of the oases. Climatic conditions are discussed in detail, and their influence on animal and vegetable life described.

The book, of which we are able to give but an imperfect idea, is animated throughout by that spirit of appreciation of the point of view of the native which is a marked characteristic of the present generation of French officials in North and West Africa. We miss any notice of the achievements of early travellers; the perfunctory bibliography does not even contain the name of Rohlfs.

F. R. C.

African Natural History.

'African Nature Notes and Reminiscences.' By F. C. Selous. London: Macmillan. 1908. Pp. xxx., 356. *Illustrations. Price* 10*s. net.*

This book embodies a collection of notes, in great part not hitherto published, made by the author during the last ten years. In many cases they are retrospective over a longer period than that, and they gain interest in consequence, in view of the rapid change of conditions in Africa from the point of view of the naturalist and hunter. The most important chapters are perhaps those in which Mr. Selous discusses the question of protective coloration of animals, putting forward arguments tending to throw doubt on the correctness of some of the views currently held. The book has an additional literary interest through the presence of a "foreword"

(spelt, it may be presumed, as it came from the writer) by President Roosevelt, at whose instigation the Mr. Selous cast these notes into book-form. Mr. E. Caldwell's illustrations are excellent.

Across Central Africa.

'From Ruwenzori to the Congo: a Naturalist's Journey across Africa.' By H. F. R. Wollaston. *With Illustrations.* London: John Murray. 1908. *Price* 15*s. net.*

This volume is accurately described by its subtitle. It records the impressions of a naturalist in a journey from Mombasa by way of Uganda, Lakes Albert Edward, Kivu, Tanganyika, to the Congo and the West Coast, and during a sojourn under the snows of Ruwenzori. There the author joined for a time, as doctor, an expedition organized by Mr. Ogilvie Grant, of the Natural History Museum. Owing to their unfortunate lack of light tents or any mountaineering equipment beyond an ice-axe borrowed from a predecessor, the English party were unable to explore the highest portion of the range. But they brought back rich results, both botanical and zoological, which have been or will be described in detail in the appropriate Transactions. In these pages Mr. Wollaston confines himself to a popular narrative. His eloquent descriptions of the charms of Lake Naivasha and the natural beauties of Entebbe should attract the tourists for whom provision has now been made by Messrs. Cook. To geographers the most interesting portion of his book is the account given of the relatively little-known highlands lying about Lake Kivu and the Mfumbiro volcanoes. This district is apparently one of the most promising in Africa for European colonization, and it is likely to be opened up in the future by the progress of the Cape to Cairo railroad. Mr. Wollaston describes scenery better than most travellers. He writes rather from an artist's than a topographer's point of view. The dreary belts, the swamps, or the arid monotonous plains so familiar in early books of African travel appear in his book only as interludes between noble tracts of hills and lakes, where every prospect pleases, and man, but for tick-fever and sleeping sickness, might live and prosper. Of the ravages of the latter disease as far south as the shores of Tanganyika, the author gives a most appalling account. The pestilences of the middle ages can hardly have surpassed its horrors. Mr. Wollaston is inclined to attribute the absence of crocodiles in Lake Kivu to the saltness of the water. But they are also absent from Lake Albert Edward, with the dwellers on which bathing is consequently a frequently enjoyed luxury.

Into purely political matters we cannot follow Mr. Wollaston here; we may note, however, that he agrees in the suggestions put forward in these pages as to the best scientific frontier between the Congo State, and the British possessions. We must also note that in his attempted correction of a passage in the Duke of the Abruzzi's lecture (*Geographical Journal*, vol. 29, p. 131), he convicts himself of a double inaccuracy. He writes that he told the Duke, "not that the high peaks were 'to the west of the watershed'—it was exceedingly unlikely that such high peaks should be away from the watershed—but that they stood on the west side of the range and sloped steeply down into the Semliki valley." The two particular statements would seem to most mountaineers to be identical; they do not usually speak of a peak on the watershed of a range as "on its side." And the general proposition is untenable. In the Alps, or the Caucasus, it would be easy to mention many conspicuous examples that disprove it. It may prevent in the future confusions similar to that recorded by the author (p. 124), if we point out, what is conclusively shown by Signor Sella's panorama, that in the view from Butiti on the Toro high-road the highest peak of Mount Stanley is seen immediately over the top of Johnston's Duwoni (Mount Speke), so that their snows are hardly

distinguishable in morning light. It is very possible that Mount Speke may, as Mr. Wollaston suggests, be the Saddle Peak of some early travellers. What has been disputed and disproved is the existence of the peak inserted by mapmakers under that name from 12 to 20 miles to the north of the central group and equal to it in height. Mount Speke is barely 2 miles from Mount Stanley. The volume is provided with excellent photographs, but once more we must protest against the haphazard way in which publishers have taken to insert illustrations without reference to their place in the text. A sketch-map of the country round Lake Kivu adds something to our knowledge.

AMERICA.

Labrador.

'A Woman's Way through Unknown Labrador.' By Mrs. Leonidas Hubbard, junr. London: Murray. 1908. Pp. xvi., 338. *Map and Illustrations.* 10*s.* 6*d.*

The death of Mr. Leonidas Hubbard on October 18, 1903, in the interior of Labrador, evoked additional sympathy owing to its occurrence when the explorer was within a short distance of safety. His wife determined to complete the work he had undertaken. She started from North-West river post on July 27, 1905, travelled up the Nascaupee river and down the George, and on August 27 reached Ungava bay, having covered 576 miles in this short time, by canoe, with four men. In the present volume we have not only her own narrative, but the diary of her husband, and an introduction, dealing generally with Labrador, by Mr. W. B. Cabot. Mrs. Hubbard's account of the journey is purely narrative, and forms very interesting reading; moreover, with the assistance of excellent photographs, her descriptions give an unusually clear idea of the scenery of the country she traversed. She made certain notes on the geology, flora, and fauna (in the last connection she had the almost unique experience, for a white, of encountering vast numbers of herding caribou). But she also made a running survey, and an examination of the map, in which a reproduction of the outline of the Stieler map of 1905 is overprinted with the course of the two rivers as observed by her, shows the value of her work, especially in the extraordinary divergence between her observations of the course of the Nascaupee and its course as previously conjectured. Mrs. Hubbard's laudable determination in carrying out the journey can only be inferred, but it can be inferred clearly, from her simple narrative. As to Mr. Hubbard's diary, and the account of his companion, George Elson, who with another left him in order to reach the caché of food which would have saved him from starvation, every circumstance combines to give them pathos, from the enthusiasm obvious in every line of the diary at the beginning, to the knowledge of the nearness of relief and the impossibility of reaching it, at the end. In short, this is a book which, while claiming no great scientific value, cannot fail to interest those who like to read of the doings of pioneer travellers.

Climbing in Alaska.

'To the Top of the Continent. Discovery, Exploration, and Adventure in Sub-arctic Alaska.' By Dr. Frederick A. Cook. London: Hodder & Stoughton. 1908. *Sketch-maps and Illustrations. Price* 12*s. net.*

A narrative, written in a style presumably popular in America, of journeys and explorations on both sides of the Alaska range in the neighbourhood of Mount McKinley, the highest mountain in North America, 20,390 feet, and an account of its ascent. The author states that it was made by himself and a single companion in September, 1906, in eight days from a base camp at a height of 1000 feet, mainly

by the northern ridge. Great difficulties are described as having been met with between 12,000 and 16,000 feet, and the rarity of the air was severely felt in the last 4000 feet. The climbers carried their own luggage and provisions in packs of over 40 lbs. They slept in a silk tent or in snow-huts. The lowest temperature recorded was 16° below zero (Centigrade?). The return to camp occupied four days. The book is written in a sensational style, which does injustice to the feat described. It is well illustrated, but has no adequate map or index. The comparatively large extent of bare and not steep rocks in the photograph representing the summit is remarkable. There are several appendices dealing with the geology and development of the region. It is to be hoped that some further cartographic results of the expedition may be forthcoming. Until these are available it is impossible to follow the orographic details which are somewhat confusedly given.

POLAR REGIONS.

In Search of a Polar Continent.

'In Search of a Polar Continent, 1905–1907.' By Alfred H. Harrison. London: Edward Arnold. 1908. *Price* 12*s.* 6*d. net.*

Mr. Harrison, quite single handed, undertook an expedition of extraordinary difficulty. His object was to descend the Mackenzie river to its mouth, then to cross the intervening sea to Banks island in a whaler, to travel along the west coasts of Banks and Prince Patrick's islands, and to discover land, if it exists, between those islands and Siberia.

It could hardly be expected that so great an enterprise should succeed at the first attempt. It is true that Alfred Harrison was, in several respects, well fitted for such an undertaking. With a good constitution, and great powers of endurance, he is also gifted with the faculty of conciliating natives, and adapting himself to his environment. Above all, he is a good observer, and an instructed surveyor, qualifications without which a traveller is useless from a geographical point of view.

The difficulties proved to be insuperable, and the present volume is the record of a brilliant attempt, long persevered in, entailing much hardship, but also rich in the acquisition of knowledge and priceless experience. His journey down the Mackenzie river to Herschel island on the polar ocean, his excursions into the mountains, and his intercourse with the Eskimo are described in detail, and the narratives are agreeable reading. Mr. Harrison tells his story well. The chapter devoted to a careful description of the manners, customs, and mode of living of the two tribes of Eskimo encountered by our explorer is very interesting, and forms a valuable contribution to ethnology, especially as all the facts came under the personal observation of the narrator.

It was in the summer of 1906 that Mr. Harrison, having reached the shores of the polar ocean, made his attempt to cross the intervening ice-encumbered sea and reach the southern coast of Banks island. With this object he embarked on board a whaler, with his sledges and dogs and all his belongings. He was to receive two years' provisions from the whaling fleet. After much delay, owing to being beset by ice-floes, and having to force a way through close pack, Nelson head, on Banks island, was at length sighted, a rocky headland rising to a height of 800 feet. Passing along quite close to the shore, Cape Kellett was reached, where the coast terminates in a low sandy beach. At the season when Mr. Harrison saw Banks island the snow was off the ground. "The whole island," he says, "was a mass of verdure, and it was scored with several beautiful valleys which were full of vegetation, and which extended down to the sea-beach."

Mr. Harrison was unable to proceed further owing to the failure of his arrangements for receiving supplies, and by the middle of August he was back at Herschel

island. His subsequent adventures, in the course of which he had to face dangers and hardships of no ordinary kind, often running imminent risk of death by starvation, are the subject of later chapters which will be read with great interest. They show the explorer to be admirably adapted for Arctic work, while his friendly appreciation of the Eskimo character is a pleasing trait which gives assurance of qualities much needed in the management of natives. With the Eastern Eskimo coercion is impossible. Those alone can manage them who, by patience and good fellowship, have acquired their respect and confidence.

The actual geographical results of Mr. Harrison's arduous labours consist of an exact survey, with astronomical observations, of part of the Mackenzie delta and the adjacent region, including Herschel island and the Baillie islands. Mr. Harrison is full of ardour, and eager to renew his attempt. Indeed, he contemplates an even more ambitious enterprise. His impression is that the assistance of the Eskimo is essential, and he therefore attaches great importance to the intimate acquaintance he has already formed with the two tribes known as Nunatama and Kogmolik. He believes that winter is the best time for travelling, because there is less chance of being stopped by open water. He would, therefore, start in October, taking eleven Eskimo, eighteen sledges, and one hundred and sixty-two dogs, with provisions for two hundred and sixty days. His views respecting diet are peculiar, but evidently calculated with care. His weights would amount to 20,000 lbs., each sledge taking 1200 lbs.

The whole scheme is certainly original. At the same time it is the result of experience acquired under analogous conditions, and it has been carefully thought out. Originality deserves encouragement when it is the result of experience, and it is to be hoped that Mr. Harrison, in organizing his second polar attempt, will meet with the success which his zeal and perseverance so well deserve. Meanwhile his book will be found to be alike instructive and entertaining.

C. R. M.

GENERAL.

Education.

'Der Unterricht in Geologie und verwandten Fächern auf Schule und Universität.' Von G. Steinmann in Bonn. Druck von B. G. Teubner in Leipzig. 1907. Pp. 268. *Price* 1m.

Geology in the regulations for examinations which are in force in Prussia and several other states of the empire, holds a subordinate position, being grouped with mineralogy and chemistry to form a main subject. In 1904 a sub-commission of the Gesellschaft deutscher Naturforscher und Ärzte proposed reforms by which geology would obtain a definite position in education, and the author has been asked to discuss the treatment of geology in schools. He deals with the relation of geology to other natural sciences, and especially to geography. These two he would treat as one subject, and he especially insists on the necessity of excursions, for each of which the pupils should be prepared in school by a description of the natural features of the district they are about to visit, and of its geological structure.

Commercial Geography.

'Commercial Geography.' By H. Gannett, C. L. Garrison, and E. J. Houston. New York: American Book Co.; London: G. Philip & Son. [1908.] *Price* 6*s. net.*

"Although Commercial Geography is concerned largely with the conditions of interdependence existing among the different parts of the civilized world, the deeper purpose of the study is the discovery of the causes that have been most active in creating these conditions."

This, the opening sentence of the volume, illustrates the change which is in progress in the conception of geography. Simple enumeration of isolated facts is modified by connection and grouping, and this in turn is inspired by the idea of scientific investigation of causes. The ultimate physical principles are rightly treated first, in the chapters on climate and topography in relation to life. Following on this are the conditions of manufacture and transport. Here the treatment is in the main economic rather than geographical, and parts of this section, at any rate, would be more in place in a text book of commerce. In the chapters on soils and vegetable and animal products we are carried back to a more strictly geographical standpoint, though there are occasional insertions describing purely technical processes of manufacture. The authors associate closely the source and character of a commodity with its practical uses.

The second part of the volume deals with the world by countries. Here the necessity of compressing a vast mass of material into a small space has affected the treatment adversely. The enumeration of facts leaves little room for explanation and comment. The arrangement by "countries" marks the limitations inherent in all text-books of this type. The volume is illustrated throughout by physical and political maps, and should be useful for class-work where the teacher can fill in the inevitable gaps; but it can hardly be regarded as a complete illustration of the principles enunciated by the authors.

A. J. S.

SHORT NOTICES.

Europe.—'Washed by Four Seas.' By H. C. Woods. (London: Fisher Unwin. 1908. Pp. xvi., 316. *Map and Illustrations.* 7*s.* 6*d.*) The author tells a straightforward narrative of travel, which carried him from Constantinople inland, through the Rhodope mountains, and into Bulgaria, while he also spent a short time in Asia Minor. As a former Grenadier Guardsman, his opinions on military matters carry weight; as a traveller, he did not by any means confine himself to beaten tracks (if these can be said to exist in Turkey); therefore his book is of much more than casual interest, especially at the present time. One cannot refrain from remark upon his chapter on the scavenging packs of dogs in Constantinople, with their wonderful instincts and habits. An economic and political study of the Turkish railways is given.

'A Summer Tour in Finland.' By Paul Waineman. (London: Methuen. 1908. Pp. xvi., 318. *Illustrations.* 10*s.* 6*d.*) This book consists mainly of the author's own impressions, but from them we get a clear idea of the characteristic life of Finnish towns, as well as of the characteristic absence of life in much of the country, for Mr. Waineman knows the duchy thoroughly. We may confess to a certain weariness of the unfailing supply of three-colour illustrations which now so often accompany a book of this sort: those in the present volume are crude in colour (which the scenery of Finland is not), and we turn with relief to the half-tone photographs.

'Hungary and the Hungarians.' By W. B. Forster Bovill. (London: Methuen. 1908. Pp. xxi., 352. *Map and Illustrations.* 7*s.* 6*d.*) We have here a sympathetic study of a country and its people, of which, as the author points out, comparatively little is known in England. On the topographical side we find sketches of the Carpathians, of the plain, of Transylvania, and of the Danube. There is a vivid study of life in Budapest; there are notices of the national customs, costumes, character, and arts (especially music), and of political relations. Mr. Bovill writes of Hungarians as their enthusiastic friend.

'In the Abruzzi.' By Anne Macdonell. (London: Chatto & Windus. 1908.

Pp. ix., 309. *Map and Illustrations.* 6s.) The authoress is evidently instinct with the romance of a romantic country. The book is attractively written, and records something more than personal impressions. We have thus a historical retrospect, and a study of the arts, folklore, and religion; while in that part of the book which deals with the writer's travels, she makes frequent reference to the antiquities and history of the places visited. Her language of description is well chosen. In this book, as elsewhere, the three-colour reproductions probably do injustice to the water-colour originals.

America.—'A Historical Geography of the British Colonies.' Edited by Sir C. P. Lucas. Vol. 5. "Canada: Part II., Historical." By H. E. Egerton. (Oxford; Clarendon Press. 1908. Pp. viii., 365. *Maps.* 4s. 6*d.*) The names of author and editor are sufficient justification for acknowledging this volume as a contribution of the first importance to imperial literature. It is divided into three parts, respectively entitled "The Separate Provinces," "The Union," and "The Dominion," a division suggestive of the admirable arrangement of the whole. Authorities are cited for each section.

THE MONTHLY RECORD.

THE SOCIETY.

Gift of a Portrait of David Livingstone.—The Society has received from Mr. James L. Hardcastle, of Bishop Stortford, the gift of a fine portrait, in oils, of David Livingstone, painted by General Charles Need during the explorer's lengthened stay (1864–5) at Newstead Abbey (the residence of his friend Mr. Webb), after his return from his second expedition to the Zambezi. Fountain Dale, the property of the Need family, adjoined Newstead, and it is believed that the general painted the portrait at the same time that the picture now at Newstead was painted by another artist. The later history of the portrait is as follows: From the possession of General Need it passed into the hands of the late Mrs. J. A. Need, who died on March 29 last, leaving the portrait by her will to her brother, Mr. J. L. Hardcastle, above mentioned, for life. It was her intention that it should ultimately pass into the hands of the Royal Geographical Society, an intention the realization of which has been generously anticipated by Mr. Hardcastle.

EUROPE.

Distribution of House Types in Germany.—In *Deutsche Erde*, 1908, Nos. 1 and 2, we find an interesting ethnogeographic study in the form of a discussion on the division of the Empire into "house-type districts." The chief of these is that of Middle Germany, which extends throughout the north German plain from Belgium to Russia. The characteristic country house is called after the region. It is a large timber-framed building with a diagonal-shaped room taking up the ground floor, and often containing two fireplaces, one for the oven, whence it is called the "two-fire house." In the Rhine provinces the gable is generally turned

to the street. On the other hand, in Lorraine the houses are joined together along the street, with small frontage, but with great depth. In Bavaria one finds wooden houses in the valleys built like a quadrangle with one side open. The article is accompanied by a map showing the distribution of types of houses in Germany.

Shakespeare and the Waterways of Northern Italy.—While fully alive to the intimate knowledge of Italian life, customs, and ceremonies shown by Shakespeare, commentators have reproached him with ignorance of Italian geography, basing this verdict on supposed mistakes respecting the relation of various cities of Northern Italy to the sea. In the *Two Gentlemen of Verona*, *The Tempest*, and *The Taming of the Shrew* passages occur which have been supposed to imply that Shakespeare regarded cities like Verona, Milan, or Padua as seaports. That this accusation is far from merited is maintained with considerable force by Sir Edward Sullivan, in an article contributed to the *Nineteenth Century* for August last. Thus, attention is called to a passage in the first-named play, which seems unaccountably to have escaped the commentators, in which express mention is made of the *river* (*i.e.* the Adige) in connection with the voyage under discussion. In fact, the writer considers that the passages in question indicate Shakespeare's accurate knowledge of the system of river navigation which was in use in his time and long before it. He points out that "a volume might easily be filled with extracts from chronicles, social records, and other writings to show the importance attaching to these inland water-routes in the eyes of statesmen, merchants, and private persons in early Italian days." To illustrate the state of things at and before Shakespeare's time, he gives many interesting quotations from contemporary documents, bearing on the active traffic maintained in those days on the Po and other waterways, including the navigable canals which led out of Milan in various directions, and which caused a writer in 1520 to state that Milan, far as it was from the sea, might easily be taken for a seaport town. In reference to another supposed instance of geographical ignorance on Shakespeare's part in locating a shipwreck in Bohemia, the writer points out that at an earlier period, and that the most important in its national existence, Bohemia possessed, not one, but two coasts, the dominions of Ottocar II. extending from the Adriatic to the Baltic.

ASIA.

Journey in Western China.—In connection with Mr. Fergusson's map of a portion of Western Sechuan given with the present number (see pp. 594, 648), it may be of interest to quote some items from the narrative of a journey through part of the same region, sent to us early in the year by Mr. T. Smith, of the Sechuan University at Chengtu. Mr. Smith made the journey from Kuan Hsien to Ta-chien-lu in July, 1907, by way of the Great and Little Gold rivers, in company with Mr. J. H. Edgar. The route, which in part, at least, is used as a trade-route, seems to be the same as that followed in 1904, in the reverse direction, by Sir A. Hosie, and described by him in a Parliamentary Paper (China, No. 1, 1905; *Journal*, vol. 26, p. 452). The difficulties of travelling through the narrow ravines and over the steep and high passes followed by the route are vividly described by Mr. Smith. In the eastern section the mountain sides and crests were covered with dense dripping forest, and coolies were seen carrying huge logs down the steep and slippery paths, this region being the source of supply of the timber used at Chengtu and other cities of the plain. It is rafted down to the Min from a point called San Kiang Keo (three river-mouths). Mr. Smith took boiling-point observations for altitude, and he gives the heights obtained for the principal passes, which are, however, considerably in excess of those shown on Mr. Fergusson's

map, and, being unchecked, can only give a rough approximation to the truth. The Nu-teo pass is put down as 10,559 feet, and the Ban-lan-Shan (Balang Shan of Mr. Fergusson) as 15,361 feet. After crossing the latter the road soon enters the small native state of Orih (Oirh of Fergusson), and the traveller speaks in glowing terms of the clearness and purity of the air, the beauty of the scenery, and the luxuriance of the crops in this favoured valley, which created a more favourable impression than anything seen elsewhere in China. After reaching the Hsiao Kin-ho, or Little Gold river, the road enters the "Four Colonies." Here the settlements of the Chinese and half-castes are in the valley, while the Mantse natives dwell in villages perched high upon the mountain-sides. Romi Changu, near the junction of the Great and Little Gold rivers, is a rambling town of about one hundred and forty families, with several lamaseries. It is shut in by high bare peaks, which reflect the heat till the place seems like an oven. Goitre is prevalent there. The further route led over the Tao Pao Shan, the height of which is given as 15,800 feet. The upper part of this pass is open grass and scrub land, but the final ascent is steep and trying for horses. Over the greater part of the whole route population seems to be scanty.

Population of Peking.—We have received from Mr. Rockhill details of the last census of Peking, compiled by order of the Board of the Interior, which puts the total population at a far lower figure than some previous estimates. The census is given, by families, for each of the police districts into which the inner and outer cities have now been divided. The total for the three precincts of the Inner or Tartar city is 79,009 families, and that of the two precincts of the Outer or Chinese city, 46,999, giving a grand total of 126,008. This, on the basis of 5·5 individuals per family, gives a total population of 693,044. A census of schools (boys' and girls'), scholars, teachers, and school officers, is also given for each district.

Physical Features of Sakhalin.—Since the acquisition by Japan of the southern part of Sakhalin, something has been done by Japanese geologists to improve their knowledge of the structure and geological formations of the island. Work in this direction has been done by Messrs. Kawasaki, Katayama, and Jimbo, the first of whom has presented a report, in Japanese, on the mineral resources of the island, which includes a general topographical and geological sketch, and embodies also some of the work of the other two observers. The results of these researches have been made more generally available by a summary in English, contributed by Mr. Jimbo to the *Transactions of the Sapporo Natural History Society* (1908, No. 2), of which we have received a reprint. The writer points out that Sakhalin consists of two longitudinal mountain ranges, separated from each other by the median line of depression. The latter is formed by the valleys of the Susuya and Takoi rivers in the south and of the Poronai and Tuimi on the north, and supplies a natural line of communication from north to south, though the former road on the west side of the Poronai has long been abandoned. The eastern zone of highlands consists largely of Palæozoic rocks and crystalline schists, with less extensive Tertiaries and Cretaceous, besides eruptive rocks. It is formed by the north-eastern mountain land, east of the Poronai, and the Susuya mountains between Shiretobo and Dubki. A lake region included in the latter may represent a minor line of depression. The western zone consists essentially of Cretaceous, Tertiary, and volcanic rocks, as well as older eruptives. The Russian part of the island is less known, but a remarkable contrast exists between the valleys of the Tuimi and Poronai, in that the former is narrower and is covered with woods and grasses in place of the tundras which mark the latter. A great similarity can be traced between the two mountain zones in Sakhalin and in the island of Hokkaido (Yezo), but in the latter the Cretaceous terrains on the west side abut on the axis of old

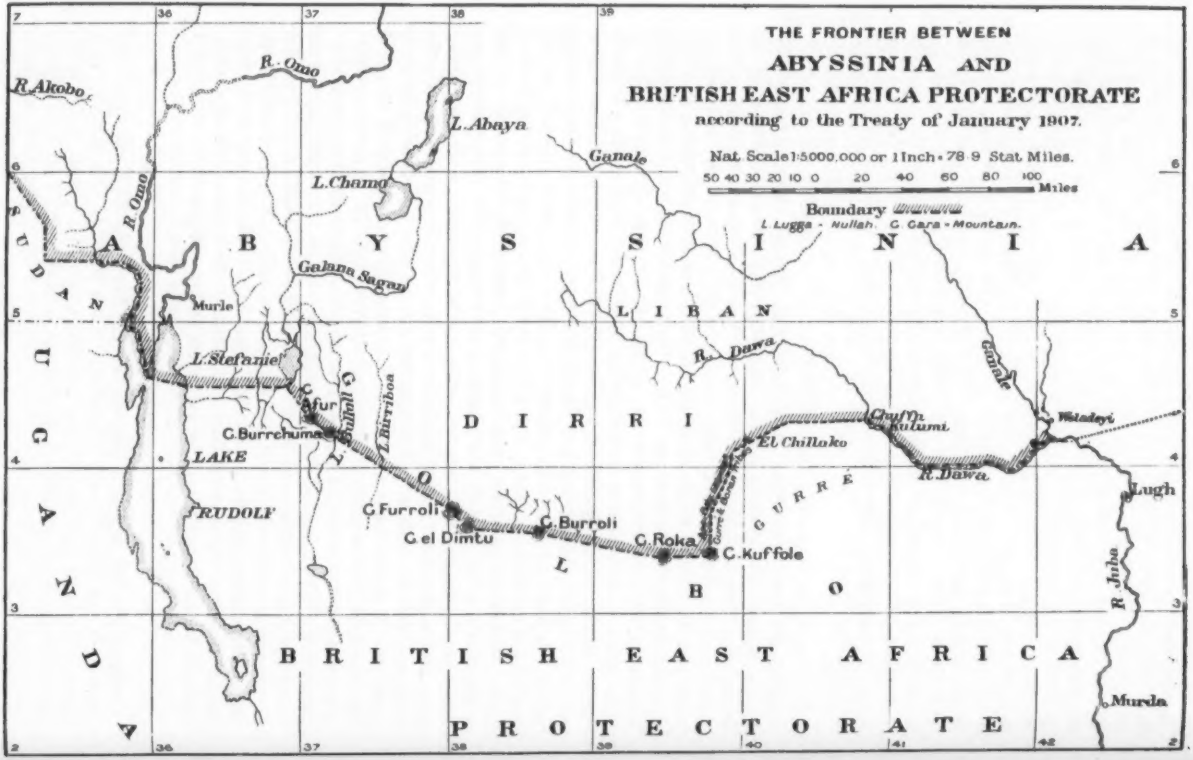
rocks, the median depression being absent. Mr. Jimbo describes in turn the main topographical features of Sakhalin, beginning with the median depression, for a knowledge of which his survey of the whole Japanese portion of the Poronai has been of considerable importance. Up to Poroto it is navigable for a small steamer of 4½-feet draught. In its valley, besides the tundras, there are forests of poplars, birches, larches, and other conifers. No definite evidence that the median depression is due to faulting has yet to be obtained. The two ranges present a marked contrast in their topographical as in their geological features, the eastern being the more rugged. That on the west is remarkable for the straightness of its coast-line, which affords little shelter to ships. Part shows a terrace formation, which is seen also on the east coast. The mountains on both sides are almost everywhere covered with dense forest. The valleys have gently sloping sides, and are clothed with tall grasses. Recent surveys show that the height of the mountains has been very incorrectly estimated, the highest elevations in the east and west being probably about 3000 and 4000 feet respectively. No peaks seem to reach the snow-line.

AFRICA.

The Boundary between Abyssinia and British East Africa.—The mutual frontier of Abyssinia and the Anglo-Egyptian Sudan was defined by the agreement of May 15, 1902, which traced the line in question as far south as the intersection of 35° E. with 6° N. lat. (*Journal*, vol. 21, p. 186 and map). No arrangement was then arrived at respecting the southern frontier of Abyssinia, on which side the British East Africa and Uganda Protectorates were the other parties concerned. This southern section was at last defined by an agreement signed at Adis Ababa on December 6, 1907, but only printed as a Parliamentary Paper in October last. Beside the text of the agreement, there is a map in two sheets based on the surveys of Major Austin and Captain Maude, from which the accompanying sketch (see next page) has been prepared. Little explanation is necessary, as the natural features by which the course of the line is determined are plainly marked on it. It should be mentioned, however, that the point on the Dawa where the line leaves that river is given in the agreement as Ursulli, which is marked on the accompanying map (with a query indicating uncertainty as to its exact co-ordinates) as opposite to the place Chuffa Kulumi shown on our sketch. From the creek at the south end of Lake Stefanie the line runs due west to Lake Rudolf, while the point at which it leaves the latter is defined as "the mouth, or marshes at the mouth, of the river Kibish (river Sacchi)." This last is left in lat. 5° 25′ N., and this parallel is followed to 35° 15′ E. This meridian becomes in turn the boundary up to its intersection with 5° 40′ N., beyond which a straight line is drawn to the termination of the Sudan Abyssinian frontier in 6° N., 35° E. It may be mentioned that the parallel of 6° is definitely shown on the map of Abyssinia lately issued by the War Office as the boundary between the Sudan and the Uganda Protectorate, and that the starting-point of the new frontier on the east is also that of the boundary between Abyssinia and Italian Somaliland, as defined by the treaty of May last.

AMERICA.

Changes in the Bogoslov Islands, Bering Sea.—Reference was made in the *Journal* (vol. 29, p. 228) to the formation of a new island in this group in 1906, but until lately no clear account had been available of the precise nature of the changes which then and subsequently affected the locality. This has been supplied by an interesting paper printed in the *Bulletin* of the American Geographical Society for July of this year, entitled "The Evolution of the Bogoslof Volcano."


THE FRONTIER BETWEEN
ABYSSINIA AND
BRITISH EAST AFRICA PROTECTORATE
according to the Treaty of January 1907.
Nat. Scale 1:5000,000 or 1 Inch = 78·9 Stat. Miles.
50 40 30 20 10 0 20 40 60 80 100 Miles
Boundary
L. Lugga - Nullah C. Gara - Mountain.
R. Akobo
R. Omo
L. Abaya
Ganale
L. Chamo
R. Omo
Galana Sagan
Murle
L. Stefanie
G. Burrchuma
LAKE
RUDOLF
G. Furroli
G. el Dimtu
G. Burroli
G. Roka
G. Kuffole
El Chilloko
R. Dawa
Ganale
Lugh
R. Juba
Murda
ABYSSINIA
DIRRI
GURRÉ
BOLO
BRITISH EAST AFRICA PROTECTORATE
UGANDA
SUDAN

The author is Mr. T. A. Jaggar, who visited the scene of the disturbances in April, 1907, on behalf of the Massachusetts Institute of Technology. The course of events from March, 1906, onwards is clearly described and illustrated by photographs and sketches. It will be remembered that the first Bogoslov island appeared in 1796; the second, a little to the north of it, in 1883; the former being sometimes known as Castle rock, the latter as Grewinck. When Lieut.-Commander Garrett reached the locality in May, 1906, he found a steaming cone midway between the two older islands.* It was connected with Grewinck by a low flat ridge, but separated by a channel from Castle rock. The summit showed a broken horn bending to the north-east, indicating that the mass had been forced up through an aperture in a plastic condition, and thus recalling the Pelée tower which attracted so much attention after the Martinique eruption in July, 1906. This cone (which had been named Metcalfe cone by Garrett) had a solid rock core, and the salt-water lagoon, which half encircled it on the north, had a temperature of between 70° and 90°, the steam vents giving temperatures of from 94° to 212°. In the spring of 1907 it was reported that still another peak had arisen, and this was found to be the case when the cutter *McCulloch* visited the scene in July of that year. Half of Metcalfe cone had by that time collapsed, while the channel between it and Castle rock was filled up with the new steaming heap ("McCulloch peak") and a wide stretch of gravel wash. The observations of the expedition of the Institute of Technology showed that the whole group formed a continuous mass above tide-water about 2 miles long, with the two new steaming cones in the middle 400 to 500 feet high, the intervals between these and the older islands being filled with sand, gravel, and volcanic bombs, though McCulloch peak was almost encircled by a hot salt-water lagoon. The portion visible above the sea was, however, only the top of an immense submarine heap of lava 6000 feet high. On the rocky wall of Castle rock evidences of recent elevation were seen, the conclusion being that either a larger mass of lava was spreading itself out below and lifting the volcano on its back, or that the whole sea-floor was slowly warping upwards. On September 1, 1907, twenty-four days after the expedition had left the spot, the inhabitants of Iliuliuk saw a dense black cloud rising towards the west, and ash and sand soon began to fall. The *McCulloch* visited Bogoslov in October, and found that McCulloch peak had entirely disappeared, its place being taken by a steaming lagoon, though the half of Metcalf cone was still standing. Mr. Jaggar suggests that the dome and spines which first rose above the sea as Metcalf cone were the top of a body of hard lava rising within an earlier solidified crust of its own substance. The central streams subsequently moved up and out, bending over and forming the striking protuberances and carapaces observed. Eventually there was only a small pencil of lava pushing up in the middle. He also suggests that the continued upward pressure opened ways by which the ocean water entered, causing explosions which destroyed what had before been built up.

The Tumuc-Humac Expedition in Dutch Guiana.—The expedition of 1907, under the command of Lieut. de Goeje, travelled from Majoli on the Palumen, or upper Tapanahoni, to Apikollo (in 2° 6′ 53″ N. lat. and 56° 16′ 40″ W. long.) and the Sipaliwini, twice crossing the mountains which here make a curve to the north. During the first passage of the mountains a peak named Alimi-muni, nearly 2500 feet high, was observed, and the drainage basin of the western Paru was entered. The Sipaliwini, a stream some 30 yards broad near Apikollo, is said by the Trio Indians to unite with the Kutari and Kulunti, and is most probably the

* The Ship rock of Captain Cook, which also occupied a position between the sites of the two islands, seems to have disappeared before this date.

Sipariwuini of Schomburgk, a tributary of the Curuni. The whole country is covered with forest except a small savannah at the head waters of the Paru and one of somewhat greater extent near Apikollo. The name Tumuc-Humac is unknown to the natives, and its origin is unknown. In the *Tijdschrift* of the Dutch Geographical Society for September last there is an account of the expedition, illustrated by a map and profile, together with a map on a smaller scale showing the geography of the whole Dutch colony as now known. Full details are given of the cartographical materials used and of the astronomical observations made by other travellers, and appendices deal with the language of the natives and the geology. Specimens were collected of granite, quartz-porphyry, porphyrites, and sericite schist.

AUSTRALASIA AND PACIFIC ISLANDS.

The Ben Lomond Range, North-East Tasmania.—We alluded early in the year (vol. 31, p. 109) to recent observations in this imperfectly known range, taken with a view to determining its highest point. We have since received from Colonel Legge, who has taken a foremost part in the exploration of the range, the summary of a paper on the physical features of the Ben Lomond plateau, read by him last year before the Australasian Association for the Advancement of Science, together with a note on his two expeditions of 1906 and 1907. Ben Lomond forms the trunk from which two plateau-like areas, averaging 2000 feet in altitude and crowned by tor-like summits, reach out to the north-west and north-east respectively. The mountain chain so formed is entirely separated by the South Esk river from those of Northern Tasmania. The climatic conditions of this part of Tasmania are much affected by the range, which during westerly weather shelters the country to the east and south-east from the heavy precipitation on the opposite side, the contrary conditions obtaining during heavy easterly weather. The plateau is completely surrounded by a precipitous diabase escarpment which rises from the surrounding "tiers," and supports it at elevations of from 4500 to 5000 feet. Topographically the surface is divided by a deep depression into two main divisions, from the southern of which the Nile river issues by a profound gorge in the western escarpment; its source lying in a lake near the eastern escarpment. Nearly all portions of the upland are clothed with an interesting alpine vegetation, few low-country forms being found except on the slopes of one valley, to which *Eucalyptus viminalis* has made its way from below. The dominant plants are four species of *Richea* or "honey-plants," two of *Orites* or "yellow-bush," two of *Olearia*, one *Ozothamnus*, *Bellendena montana*, and the mountain "ti-tree." The mountain currant, *Coprosma nitida*, persists in a stunted habit to the topmost peaks of the northern division.

German Research in the Western Pacific.—Great activity is at present being displayed by the Germans in the direction of scientific research in their possessions in the Western Pacific. In addition to various expeditions already referred to in the *Journal*, one which has been despatched by the "Landeskundliche Kommission" for the German Colonies (the organization which has also carried out much good work in East and West Africa), under Drs. Sapper and Friederici, has secured some interesting results (*Deutsches Kolonialblatt*), Nos. 15, 20, 21, 1908). After geological and ethnological work in New Hanover (which is described as very uniform from these points of view, though more varied as regards its surface features), the travellers proceeded to New Mecklenburg (New Ireland), crossing and recrossing the Schleinitz range in the western half of the island. Dr. Sapper then proceeded to Bougainville in the Solomon group, which was traversed from coast to coast, the mountain range being crossed by a pass over 4500 feet high. Here too

the geology was found to be very uniform, the island consisting mainly of recent eruptive rocks, while no fossils were met with in the scanty sedimentary formations. Smoke was seen to issue from the two volcanoes, Balbi and Bagana, and whereas that from Bagana was carried north-west by the south-east trade-wind, that of the higher Balbi was driven eastward by the anti-trade. Many of the inhabitants had deserted their dwellings, but offered no molestation to the party. Dr. Friederici had meanwhile continued his ethnological work on New Mecklenburg, and had also visited Gardner and Fisher islands, to the north. Having failed to meet Dr. Sapper, he completed his researches in New Mecklenburg by various journeys in and across the south-eastern part of the island, which was also investigated by Dr. Sapper, who crossed it from west to east, besides following a good part of its coast-line. Coal was found near the south-east coast, but the traveller is not sanguine as to the possibility of its exploitation. Some further details respecting the journey across Bougainville are given in No. 21 of the *Kolonialblatt* in a report by the governor of German New Guinea, in whose company Dr. Sapper travelled. This seems to have been the first occasion on which the island was crossed by Europeans.

POLAR REGIONS.

A New Norwegian Arctic Expedition.—Plans for a new Arctic expedition, which promises to be one of the most important taken in hand for some time, are being developed by Captain Roald Amundsen, whose successful expedition to the North Magnetic Pole, leading to the achievement of the long-sought north-west passage, marks him as particularly fitted to carry through a further work of the kind. The project is warmly supported by Dr. Nansen, who sends us some details as to the probable arrangements. His own famous voyage in the *Fram* will serve to some extent as the example to be followed, for the central idea is the utilization of the drift of the Arctic ice for the transport of the ship across the Polar basin. Captain Amundsen, who is applying himself to the task with the same energy and thoroughness as marked the organization of his former expedition, proposes to pass through Bering straits and enter the ice to the north-west of Point Barrow, drifting thence across the Polar sea. He contemplates the possibility that five or even six years may be needed to accomplish the whole voyage, and he will be fully prepared for this eventuality. Oceanographic investigations of various kinds will be carried out during the voyage, and Dr. Nansen points out that nowhere else are the conditions for solving the problems connected with the circulation of the ocean so favourable, while important geographical results may also be expected. The Norwegian Government will propose to the Storthing that the *Fram* be put at the disposal of the expedition, and that such repairs be executed as may be needed to put her in perfect condition for the voyage. It is hoped that Captain Amundsen may come to this country towards the end of January, and that he may explain his plans and invite discussion of his project at an evening meeting of the Society.

MATHEMATICAL AND PHYSICAL GEOGRAPHY.

Visibility of Mountain Summits at Great Distances.—In a note in *La Géographie* (July, 1908, p. 39) M. Paul Girardin calls attention to a recent case (October 18, 1907) in which the summit of Mount Blanc was seen with great clearness across the chain of the Jura from the Marseilles express while leaving the railway station at Dijon. The distance is 220 kilometres (136·7 miles) and it is only on rare occasions that the conditions are such as to permit the mountain to be seen at this distance. The day in question, although dull, was marked by unusual clearness of the atmosphere, due to the rainy weather which had preceded it. M.

Girardin mentions other authenticated instances of the visibility of mountains from long distances, though in some of these both extremities of the visual ray have been at some elevation above sea-level, whereas in the case above mentioned the view-point was on the plain, only 243 metres (797 feet) above the sea. Mount Canigou has been seen from the heights which dominate Marseilles, at a distance of 253 kilometres (157 miles), though it is only when the range is projected on the disc of the setting sun, in February and October, that this is possible. Again, Mount Blanc has been seen from the Puy de Dôme at a distance of 303 kilometres (188 miles). Long distances have been covered, as is well known, by observations during geodetic operations, such as those for the linking of the Balearic islands and Corsica with the mainland of Europe, or for the junction of the surveys of Spain and Algeria, carried out by General Perrier in 1879. M. Girardin adds some simple formulæ for the calculation of rays of visibility, though these presuppose the use of metric units, and would of course not be applicable without modification in the case of English measures.

The Accumulation and Storage of Moisture in the Soil of Rivers of the Plains.—Mr. Oppokov has studied the relationship between the precipitation and discharge of the Dnieper above Kiev during the twenty-nine years 1876–1905, and has summarized his conclusions in a paper presented to the Eleventh International Navigation Congress at St. Petersburg (St. Petersburg, Société d'Impression artistique, 1908). Briefly stated, they are as follows: (1) During dry years there is a consumption of moisture stored in the soil which is lost by evaporation, and this consumption has to be supplied during the first wet year which follows one or more dry years. (2) This consumption and storage amount to about 135 millimetres, and equals the mean annual discharge of the river. (3) The amount of evaporation, especially in dry years, may be greater than the difference between rainfall and discharge, but in wet years, especially those which follow dry years, it is less. (4) Hence the discharge percentage is high during years of drought when compared with that during a wet year immediately succeeding a dry period. This is due to the slow movements of subterranean waters in flat regions, and the very gradual change in their condition, which does not affect the flow of the river for a year. (5) The forest and marshes of the river-basin are the most powerful agents of evaporation. Their influence on the discharge in the summer of a dry year is to diminish the discharge, and this may be traced even in a wet year which succeeds a dry period. (6) The *rôle* of the forest varies with the geographical and climatic conditions in general and the climate of a particular year. In the normal year in Central Russia this influence is zero, but in dry years in the centre, and in all years in South Russia, it diminishes the discharge, while in wet years in the centre, and in all years in the south, the forest probably stores water. (7) Marshes in the area studied have no influence in a normal year, but diminish the discharge in dry years. Hence the drainage of marshes by diminishing evaporation helps a river. (8) Sandy porous soils are the most important agent in supplying underground water, not merely to rivers, but to marshes. Mr. Oppokov asks for observations in other river-basins.

Mountain Passes.—In the *Forschungen zur deutschen Landes- und Volkskunde* (vol. 17, part 2), which, since the death of Prof. Kirchhoff, has been edited by Dr. F. G. Hahn, Professor of Geography in Königsberg University, there is a classification by Dr. Solch, of Vienna, of mountain passes in general, with particular reference to those of the Eastern Alps. The author begins by discussing the idea underlying the term "pass." This differs in its morphological acceptance from the connotation of its geographical definition. The latter has special connection with the use by mankind of passes as lines of communication. Traffic passes, as they

are called, have various origins. They are concentrations of routes through swamps, deserts, and mountain chains. They are found along sea-shores, and may be described as local or central. Morphologically, they depend upon the type of their approach valleys. Some pass over mountains, while others are deep trenches cut through. The Splugen and Bernardino are examples of the latter. Prof. Davis's theory of the geographic cycle includes the phenomena of old and young land forms. The former class exists in the trunk passes of Styria and the Eastern Alps. Heim suggests that running water is one of the chief agents in the formation of gaps through mountain chains, but many passes in the Alps must date from the ice age. Other factors in the formation of such thoroughfares are petrographic and tectonic. Foldings and faultings which give rise to Schollenlands like the highlands of south-western Germany, have their own type of valley, which differs from the smoothly sloping trenches due to fluviatile erosion. The Alps are characterized by the action of glaciers which have ground channels for their outflow through both hard and soft rocks. Their courses are marked by perched blocks and masses of morainic material, and are therefore more difficult of passage than fluviatile or tectonic passes. They are generally more deeply cut, and not so high in comparison with the mountain summits or crests, through which they can be followed. The degree of accessibility of a pass may be said to be a function of its age. Glacial action is traceable in the routes through the Pyrenees and the mountain system of Scandinavia. In the case of the former political considerations prevent them from being used as much as are those of the Alps. Destructive processes are thus characteristic of old mountain systems, but the very remoteness of their beginnings cause the geographer to be content with hypothesis rather than with certainties. There are some interesting photographs of the Bernina and Julier passes, with diagrams and a bibliography.

GENERAL.

Bird Migration.—Interesting experiments with a view to throwing light on bird migration have lately been carried out by the authorities at the "Vogelwarte" at Rossitten, on the Kurische Nehrung, in East Prussia. Young half-fledged storks have for some time been marked by means of an aluminium foot-ring, the number so treated having reached a total of some 1800 (*Deutsches Kolonialblatt*, September 15, 1908). Two such marked birds have been reported from widely separated parts of Africa, the first, which commenced its southward flight in August, 1906, having been captured by natives on the northern shore of Lake Fittri, in Wadai, in October of the same year. The ringed foot came into the possession of a French officer, Lieut. Loisy, by whom it was forwarded to Rossitten. The second bird had accomplished a far longer flight. Its ring had been attached in July, 1907, near Gross-Möllen, in Pomerania, and it started south on the 25th of the following month. On December 9, 1907, it was shot by natives near Fort Jameson, in Rhodesia, thus affording a proof that these birds cross the equator into southern latitudes while on their southward flight. Other birds have also been marked, and some of these have likewise been reported—one from Tunis. It is hoped that when the fact of these experiments becomes more widely known, more of the birds may be heard of, and the Director of the Vogelwart makes an appeal to all who may become possessed of any marked birds to send them intact to the address given on the ring, deprecating at the same time any systematic war on the birds, with a view to obtaining marked specimens.

The Eleventh International Geological Congress is to be held at Stockholm in 1910. We have received from Prof. J. Gunnar Andersson, of Stockholm, the General Secretary to the Congress, a preliminary circular relating to the proposed

arrangements. It is considered desirable that preference should be given in the programme to the discussion of such questions as can receive new light from the geological phenomena of Sweden or the Polar Regions. A number of excursions are planned in connection with the meeting, the longer ones being arranged to precede or follow it, while several one-day excursions will take place during the meeting. The first excursions will be those to northern Sweden and Spitsbergen, which will begin about July 25, the meeting itself taking place about August 18 to 26. The subsequent excursions will be to various parts of southern Sweden, and the last of these will finish about the middle of September.

Honour to Mr. John Thomson.—In recognition of his early exploration of the antiquities of Cambodia, the President of the French Republic has conferred on Mr. John Thomson the honour of "Officier de l'Ordres du Cambodges."

German Colonial School.—In a recent number (1908, No. 2) of *Deutsche Erde*, a magazine for the study of German life in every phase, there is an article on the colonial school in Witzenhausen, with a biographical sketch of Prof. Fabarius, the director, by way of introduction. The institution was founded for the purpose of training young Germans in the administration of colonies oversea, and there are courses in practical economy, forestry, agriculture, cattle-breeding, and viticulture. All these are regarded as parts of the task of Germanism in world politics.

A London Monument to Captain Cook.—It is somewhat strange that no adequate monument to the great navigator should at present exist in London, though in Sydney and other cities of Australia his services have been suitably commemorated. The subject has lately been brought to the notice of the public by a letter to the *Times* from Sir J. H. Carruthers, who urged that some effort should be made to remedy this state of things. His proposal has since been warmly taken up by a small number of distinguished naval officers well acquainted with the Pacific, who, while bearing personal witness to the value of Cook's work in that quarter of the globe, have made an appeal to the public to support the proposed action. It is not the fact that no memorial whatever is to be found in any part of London, for, as pointed out in the *Times*, a terra-cotta medallion was last year fixed by the London County Council to the front wall of 88, Mile End Road, Cook's residence for some years. Outside London, a limited number of monuments to the navigator exist, *e.g.* the column on the top of Easby moor, near his birthplace—the village of Marton in Cleveland; and one erected by Sir Hugh Palliser (under whose auspices Cook received his appointment in 1768) in the grounds of his residence in Buckinghamshire. A monument erected at Méréville, within a few years of Cook's death, by a French admirer, M. de la Borde, was figured in the *Journal*, vol. 9, p. 226.

A New Travel Monthly.—Apart from our own *Journal*, the periodical literature specifically devoted to travel and associated subjects in this country has hitherto been extremely scanty, and we therefore welcome the announcement of the prospective issue of a new publication of the kind, under the title *Travel and Exploration*, the first number of which is to appear at an early date. It will be published by the firm of Mr. H. F. Witherby, who is himself known as a traveller both in Asia and Africa. We understand that while the form of the magazine will be such as to appeal to the general public rather than to specialists, every effort will be made to ensure that the information supplied is thoroughly sound and trustworthy. Besides illustrated narratives of travel, it will contain notes on a variety of topics connected therewith, including practical hints on the subject of outfit and methods of travel in general, as well as items of current information on the progress of exploration. The magazine will do a useful work if it aids in diffusing geographical knowledge

among the general public; while it should, at the same time, supply bright and interesting matter to those who read for entertainment only. Picturesque description, even in the case of fairly well-known countries, will never entirely lose its freshness.

Port of Manchester: Erratum.—In the November *Journal*, p. 501, the last three lines on the page should come at the end of the preceding paragraph.

Vicinity of Lake Te Anan: Errata.—For "Te Anau" read "Te Anan" throughout, and in sketch-map; for "By Prof. R. Marshall" read "By Prof. P. Marsball," and in sketch-map; p. 354, l. 22, for "Manipouri" read "Manapouri," for "Poteritari" read "Poteriteri"; l. 37, for "Darvan" read "Darran"; p. 356, l. 4, for "Dumed" read "Dunedin"; l. 3 from bottom, for "plots" read "flats"; p. 357, l. 5, for "from" read "in"; p. 358, l. 1, for "Melbourne" read "Sydney"; l. 7, for "height" read "vertical height"; l. 15, for "Cleddan" read "Cleddau"; l. 20, for "Grove" read "Grave"; l. 33, for "is" read "are"; p. 360, l. 5, delete "after"; l. 6, for "spring bring" read "spring often bring"; l. 8, for "hedges" read "ledges"; ll. 33, 34, for "*Notogoyus menziesia*" read "*Nothofagus menziesii*," for "*Plagianthus lyalli*" read "*Gaya lyallii*"; l. 7 from bottom, for "*Celinisias*" read "*Celmisias*"; p. 362, l. 2, for "dip" read "gap"; l. 3, for "over the" read "over to the"; l. 4, for "dip" read "gap"; l. 6, for "Grove" read "Grave"; l. 17, for "space" read "spurs"; p. 363, l. 4 from bottom, for "developed" read "eroded."

OBITUARY.

Archibald Little.

It is with great regret that we record the death, which occurred at Falmouth on November 5, of Mr. Archibald Little, well known for his travels and commercial enterprise in Central and Western China. The son of a medical practitioner, Mr. Little was born in London in 1838, and was educated at St. Paul's School, and subsequently in Berlin. Going out to China many years ago, he settled in Sechuan, founding the Chung-king Trading Company, and doing much to open up commercial intercourse with the region of the Upper Yang-tse. The achievement which especially drew public attention to his work in China was his success in passing the rapids of the Yang-tse gorges with his little steamer the *Pioneer*, though the difficulties of the passage made it impossible to utilize this section of the river for a regular service of steam transport. Mr. Little's many journeys took him into some little-visited districts in the extreme west of China, and his experiences on several of these were described in his interesting volume, 'Mount Omi and Beyond,' which showed him to be possessed of no mean powers of observation. On these journeys he was accompanied by Mrs. Little, who is herself well known as the author of various books on Chinese life and characteristics, and who has initiated various movements of social reform in China—in particular, that in opposition to the practice of foot-binding among the women. Mr. Little was also the author of a useful volume on 'The Far East,' in the 'Regions of the World' Series, practically the only modern text-book in English on the geography of China and neighbouring regions. He had been a Fellow of our Society since 1866.

Dr. S. W. Bushell.

Dr. S. W. Bushell, whose death occurred in September at his residence at Harrow-on-the-Hill, was well known to the learned world as the writer of a variety of books and papers on subjects connected with China and the Far East, especially those bearing on art and antiquities. A son of Mr. William Bushell, of Ash-next-Sandwich, Kent, he was born in 1844, and educated for the medical profession. After a short tenure of appointments at Guy's Hospital and the Bethlem Royal Hospital, he went to China in 1868 as physician to the British Legation at Peking, and retained the appointment for thirty-one years. Besides being a Fellow of our Society, he had served on the councils of the Royal Asiatic and Numismatic Societies, and was a corresponding member of the Zoological Society. Besides numerous papers in learned societies' transactions, he was the author of a work on 'Oriental Ceramic Art,' published in 1899. Of a singularly retiring disposition, he had never come much before the public at large; but to those behind the scenes he was known as a man of sterling worth and sound learning. He was made a C.M.G. in 1897, and retired on a pension in 1899.

A. J. Mounteney Jephson.

The last survivor among the European members of the Emin Pasha Relief Expedition has passed away in the person of Mr. A. J. Mounteney Jephson, who died at Ascot from heart-failure on October 22 last. The deceased was the youngest son of the Rev. John Mounteney Jephson, and was educated at Tonbridge preparatory school and at Eton. Besides serving under Stanley he had for a time held a lieutenant's commission in the Royal Irish Rifles. During the Emin Pasha Relief Expedition he was one of the leader's most trusted coadjutors, and was sent in advance of the main expedition to open up communication with Emin. It was while engaged on this mission that he shared the Pasha's experience in being made a prisoner by the latter's revolted Sudanese soldiers; but the two white men eventually escaped and joined the relief expedition. After his return Jephson told the story of these occurrences in his book entitled 'Emin Pasha and the Rebellion at the Equator,' and two years later he published another work under the title 'Stories told in an African Forest by Grown-up Children.' In 1895 he was appointed a Queen's messenger, and was reappointed after the King's accession. Like Stanley's other officers, he was in 1890 presented by the Royal Geographical Society with a bronze copy of the special gold medal given to his leader; and he was also a medallist of the Brussels Geographical Society.

Dr. Wilhelm Reiss.

One of the most fruitful in results of the co-partnerships between scientific travellers, to which geography has owed so much, was that of Drs. Reiss and Stübel, whose joint labours in the volcanic region of the Andes of Ecuador have long been classical. Dr. Stübel's regretted death in 1904 has now been followed by that of his colleague, Dr. Reiss, to whom, though slightly the junior of the two, the inception of the scheme for research in the Cordillera was originally due. His death was the result of an accident while shooting in his park at Schloss Könitz, in Thuringia. Reiss was born at Mannheim in 1838, and showed an early bent towards science, which he studied at Heidelberg, paying special attention to geology. He made a number of journeys of research in Southern Europe and the islands of the Eastern Atlantic, where his interest became quickly directed

to volcanic problems. Having qualified as a teacher of geology at Heidelberg, he soon undertook further research journeys, in company with Stübel and Karl von Fritsch, with whom, in 1866, he visited Santorin immediately after the great eruption. Having developed his scheme for a thorough exploration of the volcanic region of the Andes, and secured the co-operation of Stübel, he set out thither in 1868, and the two friends spent nine years—working sometimes together, sometimes separately—in the investigation of the ranges of Colombia, Ecuador, Peru, and Bolivia, Reiss undertaking, in addition to geological studies, the astronomical and geodetic work necessary to supply a basis for the map. After their return to Europe the travellers undertook the preparation for publication, on a large scale, of the abundant material secured; but though many memoirs have since been published, the work has unfortunately been left still incomplete. Reiss was intimately connected with the Berlin Geographical Society, over whose meetings he presided in the years 1885 to 1887 and again in 1891. He continued throughout to take an eager interest in the progress of volcanic research, as well as in questions of a wider scope.

Rudolf Credner.

We regret to have to record the death of Prof. Rudolf Credner, of Greifswald University, in the fifty-eighth year of his age. Of robust giant frame and genial temperament, his health yet never properly rallied from the severe attack of 1904. The following particulars are taken from a biographical notice in *Geographischer Anzeiger* (vol. 9, No. 8): Of the thirty years devoted by him to the teaching of geography, twenty-seven were passed in Griefswald; first as extraordinary, and since 1891 as ordinary, professor. If Pomerania is now, more or less, alive to the interest of geography, the credit is due in the first place to Credner. To his initiative was due the founding, in 1882, of the "Geographische Gesellschaft in Greifswald," and he continued its president for a quarter of a century. In a score of excursions he elucidated the geography of the Baltic lands, drawing members even out of middle Germany to learn under his leadership the fascinating science of land and people. To his pen we owe numerous essays and treatises on the geography of Pomerania and Rügen; to his impulse, many more. His photographically illustrated lectures, clear in method and pithy in expression, backed by excursions in all weathers into the surrounding lands, and immediate interchange of question and answer with nature, exercised an inspiring influence on his hearers. In his students especially he kindled an abiding love and enthusiasm for the science. To him and his school we owe in part our present knowledge of those peculiar oscillations which the southern shores of the Baltic have undergone since the great glaciation, as well as the exact investigation into the conditions of the original ice-stream and the diluvial deposits of outer Pomerania.

CORRESPONDENCE.

The Bhot Kol Glacier, Nun Kun Mountains.

In the *Geographical Journal* for January, 1908, there is the account of a lecture by Dr. Hunter Workman on Nun Kun mountain. In it he refers to my previous exploration, and with regard to the extensive glacier on the west Dr. Workman asserts that I am wrong in stating that the glacier goes to join the Bhot Kol glacier, and he also says that the topography of Major the Hon. C. G. Bruce is confused.

Dr. Workman's map depicts the glacier as turning south to the Zoj Nai valley, and he even ventures to alter the position of such triangulated peaks as D 42.

I wrote to Major Bruce, who informs me that he ascended from Tongul, crossed the Sentik pass, and, then turning west, descended the Barmal glacier (of which he was the discoverer) and joined the Bhot Kol glacier. I informed Dr. Workman of this, and as he refused credence I asked two friends to visit the glacier. Accordingly, in August the Rev. M. E. Wigram crossed the Bhot Kol from Suru, and on the following day with one or two natives he ascended the somewhat steep icefall of the Barma glacier and found himself on the great upper glacier almost level, at a height of about 14,000 feet, with the Dome peak of Nun Kun, in full view at the head of the glacier 10 or 12 miles off. Mr. Wigram had my small map (published in the *Alpine Journal*) with him, and considered it correct.

A. Neve.

Asiatic Travels.

The reviewer, in the November *Journal*, of 'Selections from Travels and Journals in the Bombay Secretariat,' writes: "As to whether these papers had been published before, the editor gives little definite information in his Introduction." A critic, desirous of removing the possibility of a grave misapprehension, would have quoted the first words of the Preface: "The documents in this volume were brought together by me when I was Director of Records, Bombay Government. They have been buried in the archives of that Government or in old journals not easily accessible. To bring them to light and to preserve them 'from the greedy and devouring jaws of oblivion' is the object of this work."

The reviewer writes: "One of the more voluminous papers is a series of letters by C. Masson, the American Orientalist, who travelled in Afghanistan some seventy years ago. We have made a cursory examination of these letters side by side with Masson's well-known work, and the letters in Mr. Forrest's book appear to be identical in many respects, but there are improvements in the choice of phrases, descriptions, and so on, in Masson's book which leads one to think that the manuscript now reprinted may have been a sort of rough draft of the published work." The MS. was most certainly not a rough draft of the published work. If the critic had not made merely "a cursory examination" of the book he reviewed, he would have discovered that the papers were given to the Resident in the Persian gulf by Masson. The Resident forwarded them to the Bombay Government. In 1842, twelve years after he had given the papers to the Resident, Masson published his 'Narrative of Various Journeys In Balochistan, Afghanistan And the Panjab Including A Residence In those Countries From 1826–1838.' In chap. i. p. 2, vol. ii., Masson writes: "I there [Bushir] drew up from materials in my possession, and from Recollections, a series of papers relating to my journeys, and the Countries through which I had passed, which was forwarded to the Government of Bombay, or to Sir John Malcolm, then the Governor. I was not aware that such use would be made of them, nor am I quite sure I should have wished it; and I doubt whether it has not proved more hurtful than beneficial to me. I may justly lament that these documents should have been artfully brought forward in support of unsound views and ambitious projects. I may also be dissatisfied in a less degree, that the information they contained has served the purposes of men wanting the generosity to acknowledge it." On September 11, 1833, Mr. D. Wilson, the Resident in the Persian gulf, wrote: "I beg to observe that the papers now forwarded were given to me by Mr. Masson with no injunctions or understanding of concealment; he is perfectly aware that I would not hesitate

to communicate their contents to any of my friends. . . . I did not think it necessary to state directly to Mr. Masson that I should send copies of these papers, some of which were drawn up at my suggestion, and avowedly to be communicated to some distinguished individuals for the information of the Government, although he must have been aware that a public officer, situated as he knew me to be and making the enquiries I did, must have done so with a view to the good of the service" ('Selections from the Travels and Journals,' p. 106).

The reviewer writes: "Some of the names have been seriously mutilated. The village of Morad Ali is printed as Morally, and the well-known place Kohat appears throughout as Kivort." As Masson wrote from recollections, he may have put Morally for Morad Ali, or it may have been a local corruption. I do not think that even an Indian printer would, in three successive pages, convert Kohat into Kivort. As the reviewer is certain that Kivort is a misprint for Kohat, I presume he has been to Kohat and inquired whether the old name was different. In this connection, the critic, if he had read the volume with care, would have drawn attention to the important fact that Masson writes, "Khelat, when mentioned by a native, is usually styled the Kalort of Nasseer Khán." Masson also writes, "whose capital is Kalort" and "stationed at Kalort." In the 'Narrative of Various Journeys,' parts of the papers sent to Bombay were incorporated and the spelling of the places carefully revised. No alteration was, however, made in the text of the journals, for the reason given in the Preface: "Many words occur which are not easily accounted for, many names are spelt contrary to orthodox rules, many sentences war against the laws of grammar. It has been suggested that the text should be edited and the geographical information brought down to the present time. To alter the text would, however, destroy the old flavour of these travels and their main charm. It was proposed to give a list of errata, but after much labour it was abandoned as an impossible task. No two experts agreed as to what the list should contain."

"There are improvements in the choice of phrases, descriptions, and so on, in Masson's book." Masson's book was constructed with great literary skill, but if the reviewer, instead of making "a cursory examination of these letters," had read them with care and collated them with the Narrative, he would have discovered that the Journals are of far greater importance to the student of geography.

G. W. Forrest.

Iffley, Oxon., November 16, 1908.

MEETINGS OF THE ROYAL GEOGRAPHICAL SOCIETY, SESSION 1908-1909.

First Meeting, November 2, 1908.—Major Leonard Darwin, President, in the Chair.

The President said: This is the first of our evening meetings of the Session 1908-1909, and I cannot help thinking that those who have had the programme for the coming session, and who have looked through it, will agree that we have every prospect of having a session with somewhat exceptionally interesting meetings. With such a list of speakers it is rather invidious to pick out special names, but I am sure that we are all glad that we shall have the opportunity of hearing Dr. Sven Hedin on his wonderful travels in Asia. The date is not definitely arranged, but will probably be February 8. We also shall have Dr. Stein, who has done such admirable work in Central Asia.

Though I cannot discuss the geographical events that have occurred since our last meeting, I may perhaps just mention that there has recently been a Geographical Society founded at Leeds. We always keep in touch as far as we can with these local Geographical Societies, and we are delighted when a new one is founded. We also have to thank our late President, Sir Clements Markham, for presiding at the opening meeting of that Society, and making it, I believe, a thorough success.

The paper read was:—

"Unknown Western Asia." By D. G. Hogarth.

Second Meeting, November 16, 1908.—Major Leonard Darwin, President, in the Chair.

Elections:—*Herbert Thomas Allen; Wolfgang F. Asimont; Robert J. T. Barnes; Augustus Barraclough; Captain F. Bigg-Wither; H. J. Bond; Frank Bowker; Kelsall Bradley; William Anthony Brown; W. Campbell Brown, M.A.; Lieut. John Burn, R.N.R.; R. F. L. Burton; Viscount Bury; Major R. L. Carnegy (9th Ghoorka Rifles); Captain J. Chancellor, D.S.O., R.E.; Lieut. Gordon Humphry Chapman, I.A.; Captain G. F. Clayton, R.A.; Norberto B. Cobós; Rev. George Samuel Cockin, M.A.; Alexander Colledge; Walter Arnold Conduitt; John Ashley Cooper; Lieut. Fredk. George Cooper, R.N.R.; Henry Copping; Robert Firth Crosland; Harold Robert Cross; William Henry Crosthwaite; Edward R. Davson; Major H. Delmé-Radcliffe (Royal Welsh Fusiliers); Captain E. S. Dicken (Queen's Bays); Henry Dicks; John Hy. Stephen Dimmer; John Eaglesome, C.M.G.; George Washington Ellis; Ernest Favenc; Chas. Willington Furlong; T. P. Gilfedder; Rev. Wm. Glover; Lieut. J. F. S. Gordon (Lothian Regt.); Ralph Brampton Harley; Engineer-Lieut. Walter Scott Hill, R.N.; Walter J. Hill; Rev. F. A. Hirst; John E. Hodgson; William J. Hodgson; Captain J. Johnstone (King's Royal Rifle Corps); Arnold Egerton Jones; Charles Henry Kesteven; Philip Lake, M.A.; George Lamley; Hon. Francis Augustus Larmour; Captain John A. Legge; Stephen J. Lett; Captain H. F. E. Lewin, R.A.; Godfrey Charles Lomer; Edward Rogers Long; Ronald Macdonald; Donald Mackay; Captain E. E. B. Mackintosh, R.E.; Arthur B. Malden; William J. Maule; J. M. Moubray; Robert P. Page; Henry Palmer; Richard W. Parker; Sandon Perkins; John A. Pilling; Robert Alexr. Reddie (16th Lancers); Preb. Bernard Reynolds, M.A.; Alceste C. Rigo de Righi; Geoffrey E. Ryle; Captain P. H. Short (Gloucester Regt.); Captain Allen R. B. Shuttleworth, I.A.; Eric Smith; E. S. R. Smith; Fras. B. Stead; Alfred P. Stokes; Francis W. Stronge; Arthur G. Tansley; Henry B. Tate; John A. Tregelles; Sutton Timmis; Captain A. K. Utterson (Dorset Regt.); Frank B. Vrooman; Frank F. P. Walsh; Lionel E. Warren, R.F.A.; Captain W. T. Wyndowe (58th Regt.).*

The paper read was:—

"Some Aspects of the River Paraná and its Basin: an Economic Survey." By W. S. Barclay.

GEOGRAPHICAL LITERATURE OF THE MONTH.

Additions to the Library.

By EDWARD HEAWOOD, M.A., *Librarian*, R.G.S.

The following abbreviations of nouns and the adjectives derived from them are employed to indicate the source of articles from other publications. Geographical names are as a rule written in full:—

A. = Academy, Academie, Akademie.
Abh. = Abhandlungen.
Ann. = Annals, Annales, Annalen.
B. = Bulletin, Bollettino, Boletim.
Col. = Colonies.
Com. = Commerce.
C.R. = Comptes Rendus.
E. = Erdkunde.
G. = Geography, Géographie, Geografia.
Ges. = Gesellschaft.
I. = Institute, Institution.
Iz. = Izvestiya.
J. = Journal.
Jb. = Jahrbuch.
k.k. = kaiserlich und königlich.
M. = Mitteilungen.
Mag. = Magazine.
Mem. (Mém.) = Memoirs, Mémoires.
Met. (mét.) = Meteorological.
P. = Proceedings.
R. = Royal.
Rev. (Riv.) = Review, Revue, Rivista.
S. = Society, Société, Selskab.
Sc. = Science(s).
Sitzb. = Sitzungsbericht.
T. = Transactions.
Ts. = Tijdschrift, Tidskrift.
V. = Verein.
Verh. = Verhandlungen.
W. = Wissenschaft, and compounds.
Z. = Zeitschrift.
Zap. = Zapiski.

On account of the ambiguity of the words *octavo*, *quarto*, etc., the size of books in the list below is denoted by the length and breadth of the cover in inches to the nearest half-inch. The size of the *Journal* is 10 × 6½.

A selection of the works in this list will be noticed elsewhere in the "Journal."

EUROPE.

Alps. **Larden.**

Guide to the walks and climbs around Arolla. Collected and written by Walter Larden. London: S. Chick & Co., [1908]. Size 5½ × 4, pp. x. and 138. *Illustrations. Price* 2*s.* 9*d. Presented by Dr. Brushfield.*

Copies are to be obtained at the hotels at Arolla, or from Dr. Brushfield, St. Mary's, Scilly Isles.

Austria—Bosnia and Hercegovina. *Alpine J.* **24** (1908): 209–218. **Freshfield.**

Through the Dinaric Alps. By Douglas W. Freshfield. *Illustrations.*

Austria—Karst. *Globus* **94** (1908): 53–56. **Mühlhofer.**

Der Lindner-Timavo und seine Bedeutung für das Studium der Karsthydrographie. Von Leutnant F. Mühlhofer. *Plans.*

Azores—Volcanoes. *Appalachia* **11** (1908): 344–350. **Pickering.**

The Volcanoes of the Azores. By Prof. William H. Pickering. *Illustrations.*

Central Europe—Waterways. *B.S.G. l'Est* **29** (1908): 5–9. **Auerbach.**

Moselle, Sarre, Chiers. Projets de canalisation et de jonction. Par B. Auerbach.

Europe. **Trevor.**

En route: a descriptive automobile tour through nine countries and over nineteen great passes of Europe. By Roy Trevor. London: Stanford, 1908. Size 9 × 6. pp. xvi. and 304. *Sketch-maps and Illustrations. Price* 10*s.* 6*d. net. Presented by the Publisher.*

France—Forestry. *La G., B.G.S. Paris* **17** (1908): 439–452. **Clouzot.**

Anciennes forêts de la France. Par Étienne Clouzot. *Sketch-maps.*

Germany—Anthropogeography. *Deutsche Erde* **7** (1908): 14–22, 45–52. **Pessler.**

Die Haustypengebiete im Deutschen Reiche. Eine ethno-geographische Untersuchung. Von Dr. Willi Pessler. *Map and Illustrations.* [See *ante*, p. 618.]

Germany—Meteorology. **Lüdeling.**

Veröffentlichungen des K. Preuss. Meteorologischen Instituts, Nr. 197. Ergebnisse der Niederschlags-Beobachtungen im Jahre 1905. Von G. Lüdeling. Berlin, 1908. Size 13 × 10, pp. xxxiv. and 162. *Map.*

Holland—Place-names. ——

Nomina Geographica Neerlandica. Geschiedkundig Onderzoek der Nederlandsche aardrijkskundig namen . . . uitgegeven door het Kon. Nederlandsch Aardrijkskundig Genootschap. V^e^ Deel. Leyden: E. J. Brill, 1901. Size 9½ × 6, pp. viii. and 168. *Presented by the Kon. Nederlandsche Aardrijkskundig Genootschap.*

This part deals with the names of the province of Drenthe.

Iceland—Archæology. **Jonsson and Bruun.**

Oversigt K. Danske Vidensk. S. Forhandl., 1908: 73–111.

Det gamle Handelssted Gásar (at Gásum), yngre Gaesir, ved Øfjord (Eyjafjörður). Undersøgelser foretagne i Sommeren 1907. Af Finnur Jonsson og D. Bruun. *Plans and Illustrations.*

Italy—Emilia. *Riv. G. Italiana* **15** (1908): 265–280. **Govi.**

Di alcune salse delle provincie di Modena e Reggio. Appunti di Silvio Govi *Sketch-maps and Illustration.*

Italy—Præneste. **Magoffin.**

Johns Hopkins University Studies **26** (1908): Nos. 9–10, pp. 102.

A study of the topography and municipal history of Præneste. By Ralph van Deman Magoffin. *Illustrations.*

North Sea. *J.R. United Service I.* **52** (1908): 3–27. **Campbell.**

The strategical position in the North Sea as strengthened by the Forth and Clyde Battle-ship Canal and the "Dover and Sangatte" tube railway. By Vice-Admiral Sir Charles Campbell. *Map and Section.*

Russia—Finland. **Waineman.**

A summer tour in Finland. By Paul Waineman. London: Methuen & Co., [1908]. Size 9 × 5½, pp. xvi. and 318. *Sketch-map and Illustrations. Price* 10*s.* 6*d. net. Presented by the Publishers.*

Russian Empire—Population. *Petermanns M.* **54** (1908): 141–145. **Woeikow.**

Resultate des russischen Zensus und Zentrum der Bevölkerung Russlands. Von A. Woeikow.

Spain—Geographical Bureau. *Rev. G. Col. y Mercantil* **5** (1908): 213–216. ——

El Gabinete Geográfico del Ministerio de Estado.

Notes on the history of this bureau.

Switzerland—Hydrology. ——

Tableau graphiques des Observations hydrométriques suisses et des températures de l'air et des hauteurs pluviales pour l'année 1906. Bern, 1907. Size 15 × 10, pp. 10; 45 *folding Diagrams.*

United Kingdom—Geological Survey. ——

Memoirs of the Geological Survey. Summary of Progress of the Geological Survey of the United Kingdom and Museum of Practical Geology for 1907. London: E. Stanford, 1908. Size 9 × 6, pp. 176. *Sketch-maps, Illustrations, Sections, and Diagram. Price* 1*s.*

United Kingdom—Geology. *Geol. Mag.* **5** (1908): 337–341. **Bonney.**

On the evidence for desert conditions in the British Trias. By Prof. T. G. Bonney.

United Kingdom—Magnetism. **Chree.**

Magnetic declination at Kew Observatory, 1890 to 1900. By Dr. C. Chree. (From the *Philosophical Transactions of the Royal Society of London*, Series A, vol. 208.) London, 1908. Size 12 × 9, pp. 205–246. *Diagrams. Price* 2*s.*

United Kingdom—Scotland. *Scottish G. Mag.* **24** (1908): 365–369. **Mart.**

The River Massan. By Frederick Mart. *Sketch-map and Diagram.*

The Massan enters the Echaig below its exit from Loch Eck.

ASIA.

Arabia. **Lammens.**

Mélanges Faculté Orient., Université de St. Joseph, Beyrouth **2** (1907): 397–407.

Maronites, Mazonitai, et Mazoun du 'Oman. Par le P. Henri Lammens.

Asia. **Reynolds.**

Regional Geography: Asia. By [Miss] J. B. Reynolds. London: A. & C. Black, 1908. Size 8½ × 5½, pp. 128. *Maps and Illustrations. Price* 2*s. Presented by the Author.*

Asia—Political. *Asiatic Quarterly Rev.* **25** (1908): 307–328. **Lynch.**

The Anglo-Russian convention. By H. F. B. Lynch.

Central Asia. *La G., B.S.G. Paris* **17** (1908): 425–430. **Pelliot.**

Notre mission in Asie centrale. Par Paul Pelliot.

Central Asia—Anthropology. *J.G.* **6** (1908): 313–328. **Huntington.**

Khirghiz nomads and the influence of the high plateaus. (Reprinted from 'The Pulse of Asia,' by Ellsworth Huntington.)

China. *La G., B.S.G. Paris* **17** (1908): 431–438. **D'Ollone.**

De Yun-nan-sen à Teh'eng-tou (Mission d'Ollone). Par Capitaine H. d'Ollone. *Sketch-map.*

See note in the August number, p. 183.

China—Bibliography. **Cordier.**

Bibliotheca Sinica. Dictionnaire bibliographique des ouvrages relatifs à l'Empire Chinois. Par Henri Cordier. Deuxième édition. Vol. 4. Paris: E. Guilmoto, 1907–8. Size 11 × 7½, pp. 2384–3252. *Price* 45*s.*

India. ——

The Imperial Gazetteer of India. New edition. Vols. **15–18.** Karāchi to Nyāgarh. Oxford: Clarendon Press, 1908. Size 9 × 5½. *Maps and Plans. Presented by the India Office.*

India—Burma. *Records Geol. Survey India* **36** (1908): 149–155. **Cotter.**

The structure and age of the Taungtha Hills, Myingyan district, Upper Burma. By G. de P. Cotter. *Map and Illustration.*

India—Calcutta. *Records Geol. Survey India* **36** (1908): 214–232. **Middlemiss.**

Two Calcutta Earthquakes of 1906. C. S. Middlemiss. *Map.*

India—Goa. **Brion.**

Sociedade de Geographia de Lisboa. A India Portugueza. Por Hypacio de Brion. Lisbon, 1908. Size 9 × 6, pp. 30. *Illustrations.*

India—Kashmir. *Alpine J.* **24** (1908): 195–209. **Mumm.**

In and about Kashmir. By A. L. Mumm. *Illustrations.*

Japan—Sakhalin. **Jimbō.**

Preliminary notes on the geology of Japanese Sakhalin. By Kotora Jimbō. (From *Transactions of the Sapporo Natural History Society*, vol. 2, parts 1 and 2, 1907–8.) N.P., 1907–8. *Map.*

Noticed in the Monthly Record, *ante*, p. 620.

Malay Archipelago—Java. **Klerck.**

De Java-Oorlog van 1825–30. Door E. S. de Klerck. Uitgegeven door het Bataviaasch Genootschap van Kunsten en Wetenschappen. 5e Deel. Batavia, etc., 1908. Size 10½ × 7, pp. xiv. and 758. *Map.*

Persia. *B.S.G. Lille* **50** (1908): 27–38. **Merchier.**

Le plateau de l'Iran: son rôle dans la politique mondiale. Par A. Merchier. *Sketch-map.*

Persia—Ormuz. *B.S.G. Lisboa* **26** (1908): 151–153. **Jardim.**

Uma inscripção portugueza em Ormuz. Por Fernando Jardim.

Turkey—Arabia. **Moritz.**

Mélanges Faculté Orientale, Université St. Joseph, Beyrouth **3** (1908): 387–436.

Ausflüge in der Arabia Petræa. Von Dr. B. Moritz. *Illustrations.*

Describes and figures various ruins.

Turkey—Palestine—Bibliography. **Thomsen.**
Systematische Bibliographie der Palästina-Literatur auf Veranlassung des Deutschen Vereins zur Erforschung Palästinas bearbeitet von Peter Thomsen. I. Band, 1895-1904. Leipzig and New York: R. Haupt, 1908. Size 9½ × 6½, pp. xvi. and 204.
Vol. 1 of a pericdical bibliography of Palestine.

Turkey—Syria. **Lammens.**
Mélanges Faculté Orient., Université de St. Joseph, Beyrouth **2** (1907): 366–396.
Le massif du Gabal Sim'an et les Yézidis de Syrie. Par le P. Henri Lammens.

Turkey—Syria. **Monterde.**
Mélanges Faculté Orient., Université St. Joseph, Beyrouth **2** (1907): 336–345.
La voie romaine d'Antioche à Ptolemais. Par le P. René Monterde.

AFRICA.

Abyssinia. *Deutsche Rundschau G.* **30** (1907–8): 362–368, 406–413. **Castro.**
Eine Reise zum Berg Zuquala, zum See Zuai und zu den Soddo. Von Dr. Lincoln de Castro. *Map.*

Africa. *Mouvement G.* **25** (1908): 289–294. **Adler and Wauters.**
Du Cap à Banana à travers l'Afrique australe. L'odyssée de M. Adler. Par A. J. W. *Sketch-map.*
The journey was made across South Africa to the mouth of the Zambezi, and thence by Nyasa, Tanganyika, and the Congo.

British East Africa. *B.S.G. Italiana* **9** (1908): 561–576, 636–652. **Faraggiani.**
Alcune notizie sui Suk e sui Turcana. Del tenente Alessandro Faraggiani. *Map and Illustrations.*

Cape Verde Islands. *B.S.G. Lisboa* **27** (1908): 65–81. **Bascellos.**
O archipelago de Cabo Verde. Por Christiano de Senna Bascellos.

Central Africa. **Wollaston.**
From Ruwenzori to the Congo: a Naturalist's journey across Africa. By A. F. R. Wollaston. London: J. Murray, 1908. Size 9 × 5½, pp. xxvi. and 316. *Map and Illustrations. Price* 15*s. net. Presented by the Publisher.* [See Review, *ante.*]

Eritrea—Volcanoes. *Riv. G. Italiana* **15** (1908): 257–264. **Dainelli and Marinelli.**
A proposito di moderne manifestazioni di attivita vulcanica in Dancalia. Osservazioni di G. Dainelli ed O. Marinelli.

French Congo—Geology. **Gentil and Lemoine.**
Renseignements Col., Afrique française **18** (1908): 98–100.
Observations sur la géologie des pays entre l'Oubangui et le Chari, d'après les échantillons rapportés par M. G. Bruel. Par Louis Gentil et Paul Lemoine. *Sketch-maps and Illustrations.*

Gold Coast. *J. African S.* **7** (1908): 344–373. **Watherston.**
The Northern Territories of the Gold Coast. By Lieut.-Col. A. E. G. Watherston.

Portuguese West Africa—Ethnography. **Bastos.**
B.S.G. Lisboa **26** (1908): 5–15, 44–56, 81–99, 135–140, 154–176, 197–207.
Traços geraes sobre a ethnographia do districto de Benguella. Por Augusto Bastos.

Portuguese West Africa—Petroleum. **Costa.**
Sociedade de Geographia de Lisboa. A riqueza petrolifera d'Angola. Por João Carlos da Costa. Lisboa, 1908. Size 9 × 6, pp. 16.

Portuguese West Africa—São Thomé. *B.S.G. Lisboa* **27** (1908): 113–134. **Campos.**
S. Thomé. Par Ezequiel de Campos.

Sahara. *Renseignements Col., Afrique française* **18** (1908): 76–84, 102–109. **Dinaux.**
Une mission dans l'Adrar du Niger: 8 mars—25 juillet 1907. Rapport de tournée du Capitaine Dinaux. *Map and Illustrations.*

Seychelles. *B. Imperial I.* **6** (1908): 107–126. ——
The Development of the Resources of the Seychelles.

South Africa—Structure. *Petermanns M.* **54** (1908): 140–141. **Passarge.**
Die Tektonik der südafrikanischen Küsten. Von S. Passarge.

West Africa—Boundary. *B. Comité Afrique française* **18** (1908): 163–170. **Terrier.**
La délimitation franco-allemande du Cameroun. Par Auguste Terrier. *Map.*

NORTH AMERICA.

Alaska—Boundary. *P. American Philosophical S.* **47** (1908): 86–90. **Tittmann.**
Progress of the demarcation of the Alaska boundary. By B. H. Tittmann. *Also separate copy, presented.*
Noticed in the Monthly Record, November, p. 532.

Bermudas—Magnetism. *Terrestrial Magnetism* **13** (1908): 49–56. **Cole.**
Magnetic declination and latitude observations in the Bermudas. By J. F. Cole. *Chart.*

Canada. ———
Department of the Interior. Report of the Chief Astronomer . . . for the year ending June 30, 1906. Ottawa, 1907. Size 10 × 6½, pp. 136. *Illustrations and Diagrams.*
The report contains an appendix dealing with the demarcation of the Alaska boundary (see November number, p. 532). Another by Dr. R. A. Daly describes geological researches along the 49th meridian.

Canada. *Petermanns M.* **54** (1908): 123–137. **Haas.**
Zur Geographie und Geologie Canadas und des arktischen Archipels von Nordamerika. Von Prof. Dr. Hippolyt Haas. *Map.*
Largely a summary of recent researches carried out by the Geological Survey of Canada in the region of Hudson bay and the northern archipelago.

Canada—Bay of Fundy. ———
Tables of hourly direction and velocity of the currents, and time of slack water, in the Bay of Fundy and its approaches. Published by the Department of Marine and Fisheries, Canada. Ottawa, 1908. Size 10 × 6½, pp. 16. *Chart.*

Canada—British Columbia. *B. American G.S.* **40** (1908): 340–344. **Lahee.**
An Alluvial Fan, near Field, in British Columbia. By Fred. H. Lahee. *Contour-map, Section, and Illustration.*
Describes a double alluvial fan, which is slowly filling up the Emerald lake.

Canada—Geological Survey. **Nicolas.**
Geological Survey of Canada. General Index to Reports, 1885–1906. Compiled by F. J. Nicolas. Ottawa, 1908. Size 10 × 6½, pp. xii. and 1014.

Canada—Geological Survey. ———
Summary report of the Geological Survey Department of Canada for the calendar year 1906. Ottawa, 1906. Size 9½ × 6½, pp. 206.

Panama—Mosquitos. *Smithsonian Misc. Coll.* **52** (No. 1792) (1908): 49–77. **Busck.**
Report on a trip for the purpose of studying the Mosquito Fauna of Panama. By August Busck.

United States. ———
Twenty-eighth Annual Report of the Director of the United States Geological Survey to the Secretary of the Interior for the fiscal year ended June 30, 1907. Washington, 1907. Size 9 × 6, pp. iv. and 80. *Map. Presented by the U.S. Geological Survey.*

United States—California. **Patterson and Ellermann.**
National G. Mag. **19** (1908): 457–468.
The magic mountain. By J. N. Patterson. *Illustrations.*
Mount Wilson, the home of the Solar observatory of the Carnegie Institute. The striking photographs are by Prof. F. Ellerman.

United States—Coronado's March. *B. American G.S.* **40** (1908): 257–276. **Potter.**
Chichilticalli. By Samuel O. L. Potter. *Sketch-map.*
Discusses the location of this place on Coronado's route.

United States—Forests. *J. Franklin I.* **165** (1908): 345–361. **Will.**
Saving the forests and streams of the United States. By Dr. Thomas E. Will. *Illustrations.*
In support of proposed Government action.

United States—Heights. *B. American G.S.* **40** (1908): 332–340. **Darton.**
The Highest Points in States in the United States. By N. H. Darton. *Illustrations.*
Gives the altitudes as determined by the U.S. Geological Survey.

United States—North Dakota. *B. American G.S.* **40** (1908): 321–332, 401–415. **Craig.**
North Dakota life: Plant, Animal, and Human. By Wallace Craig. *Table.*

United States—Pennsylvania. *T. Connecticut A.* **13** (1907): 149–297. **Bishop.**
The state works of Pennsylvania. By Avard Longley Bishop. *Maps.*
The term "State works" here signifies canals and railways.

United States—Relief. *J.G.* **6** (1908): 305–312. **Mansfield.**
Glacial and normal erosion in Montana and Wisconsin. By G. R. Mansfield. *Illustrations.*

United States—Trade. *U.S. Census Bureau, B.* No. **91** (1908): pp. 58. ———
Transportation by water, 1906: United States.

United States—Yellowstone Park. *B. American G.S.* **40** (1908): 277–282. **Grant.**
Changes in the Yellowstone Park. By Dr. Roland Dwight Grant.
The writer considers that the changes which may be noted are no evidence that the subterranean forces are dying out.

CENTRAL AND SOUTH AMERICA.

Argentine—Chaco. **McLean.**
Informe sobre exploración al Chaco. Por Juan McLean. (In 'Boletin del Ministerio de Agricultura,' Buenos Aires, Tomo **9**, Núm. 5 y 6, Mayo y Junio de 1908.) Size 8½ × 5½, pp. 244–259. *Illustrations.*
The writer was in charge of an expedition for the examination of the country along the projected railway to Bolivia. The present report deals with the present condition of the Chaco and its native inhabitants.

Argentine—Pilcomayo. **Asp.**
Expedición al Pilcomayo, 27 de Marzo—6 de Octubre de 1903. Por Otto Asp. (Republica Argentina: Anales del Ministerio de Agricultura, Tomo **1**, Núm. 1.) Buenos Ayres, 1905. Size 10¼ × 7½, pp. 48. *Map.*

Chile—Minerals. **Yunge.**
Estadistica Minera de Chile en 1904 i 1905. Por Guillermo Yunge. Tomo **2**. Santiago, 1907. Size 10¼ × 7, pp. x. and 456. *Illustrations and Sections.*
This volume seems complete in itself, as it opens with a general sketch of Chile.

West Indies—Cotton. ———
The British Cotton Growing Association. West Indian Cotton Growing Conference, August, 1908. Manchester, 1908. Size 8 × 5½, pp. 160. *Sketch-map.*

West Indies—Cuba. *National G. Mag.* **19** (1908): 485–498. **Wilcox.**
Among the mahogany forests of Cuba. By Walter D. Wilcox. *Sketch-map and Illustrations.*

West Indies—St. Vincent. **Flett.**
Petrographical notes on the products of the eruptions of May, 1902, at the Soufrière in St. Vincent. By Dr. John S. Flett. (From the *Philosophical Transactions of the Royal Society of London*, Series A, vol. **208**.) London, 1908. Size 12 × 9, pp. 305–332. *Illustrations. Price* 2*s.* 6*d. Presented by the Royal Society.*

West Indies—St. Vincent and Martinique. **Anderson.**
Report on the eruptions of the Soufrière in St. Vincent in 1902, and on a visit to Montagne Pelée in Martinique. Part II. The changes in the districts and the subsequent history of the volcanoes. By Dr. Tempest Anderson. (From the *Philosophical Transactions of the Royal Society of London*, Series A, vol. **208**.) London, 1908. Size 12 × 9, pp. 275–303. *Illustrations. Price* 7*s.* 6*d. Presented by the Royal Society.*

AUSTRALASIA AND PACIFIC ISLANDS.

New Guinea—Dutch. *National G. Mag.* **19** (1908): 469–484. **Barbour.**

Notes on a zoological collecting trip to Dutch New Guinea. By Thomas Barbour. *Illustrations.*

A visit to Geelvink bay and its islands.

New Guinea—Dutch. *Jahresber. G. Ges. Zürich* (1907-8): 71–106. **Hirschi.**

Reisen in Nordwest Neu-Guinea. Von Dr. H. Hirschi. *Map and Illustrations.*

Account of a research expedition carried out in 1905 on behalf of a Dutch company to the region of McCluer gulf.

New Zealand—Census. ———

New Zealand, 1907. Results of the Census of the Colony of New Zealand, taken for the night of April 29, 1906. Wellington: John Mackay, 1907. Size 13 × 8½, pp. viii., 458, xlvii., and xxvi.

The total population appears as 948,649, including Maoris and the natives of the Cook and Chatham islands, etc. (about 60,000 in all).

New Zealand—Southern Islands. *Scottish G. Mag.* **24** (1908): 337–347. **Pillans.**

Notes on the Sub-Antarctic islands. By W. S. Pillans. *Map and Plan.*

The writer went as a passenger on the government steamer on its last trip to these islands.

Queensland—Great Barrier. **Hedley and Taylor.**

Coral Reefs of the Great Barrier, Queensland: a study of their structure, life-distribution, and relation to mainland physiography. By C. Hedley and T. Griffith Taylor. (Read at the Adelaide meeting of the Australasian Association for the Advancement of Science, held January, 1907.) Size 8½ × 5, pp. 18. *Sketch-maps, Diagrams, and Sections.*

See note in the Monthly Record, November, p. 533.

POLAR REGIONS.

Arctic Exploration. **Lindeman.**

Aus frühern und neuern Forschungsreisen in das Nordpolarmeer. Von Dr. Moritz Lindeman. (Sonder-Abdruck aus der Zeitschrift "Gaea," Heft 5, 1908.) Leipzig, 1908. Size 9½ × 6, pp. 18.

Arctic Exploration. **Drygalski.**

Die neusten Polarreisen und die nordwestliche Durchfahrt. Von Erich von Drygalski. (Sonder-Abdruck aus der Marine Rundschau, Berlin, Mai 1908.) Size 9 × 6½, pp. 10.

Arctic Ocean. *Ann. G.* **17** (1908): 238–267. **Blanc.**

L'expédition arctique russe de 1905. Par Edouard Blanc.

A note on this expedition was given in vol. **27**, p. 196.

South Orkneys. *Scottish G. Mag.* **24** (1908): 348–355. **Mossman.**

The South Orkneys in 1907. By R. C. Mossman. *Illustrations.*

PHYSICAL AND BIOLOGICAL GEOGRAPHY.

Erosion. *R. Engineers J.* **7** (1908): 341–359. **Pitt.**

Coast Erosion and its prevention. By Colonel W. Pitt.

Concerned chiefly with prevention from an engineering point of view.

Geology. *American J. Sci.* **26** (1908): 17–50. **Daly.**

The Mechanics of Igneous Intrusion. Third paper. By Reginald A. Daly.

Geology. *Naturw. Wochenschrift* **23** (1908): 385–393, 401–405. **Philippi.**

Ueber Intrusionen und tektonischen Storungen. Von Dr. E. Philippi. *Maps and Sections.*

Geophysics. **Love.**

Note on the representation of the Earth's surface by means of spherical harmonics of the first three degrees. By A. E. H. Love. (From the *Proceedings of the Royal Society*, A, vol. **80**.) [London, 1908.] Size 10 × 7, pp. 553–556. *Diagram.*

Oceanography—Deposits. *C.R.A. Sc. Paris* **146** (1908): 1184–1186. **Thoulet.**

De l'influence du vent dans le remplissage du lit de l'Océan. Note de [J.] Thoulet.

Oceanography—Indian Ocean. ——

Koninklijk Nederlandsch Meteorologisch Instituut, No. 104. Oceanographische en meteorologische waarnemingen in den Indischen Ocean, September, October, November (1856–1904). Utrecht, 1908. Size 13 × 10, pp. xiv. and 190. *Charts* (*in separate atlas*, size 14½ × 23).

This publication completes the series of observations for the year, former parts having dealt with the other three quarters.

Phenology. **Abbe.**

U.S. Department of Agriculture, Weather Bureau, Bulletin No. 36. A first report on the relations between climates and crops. By Cleveland Abbe. Washington, 1905. Size 9 × 6, pp. 386.

Soils. *Annuaire géol. Russie* **10** (1908): 63–75. **Glinka.**

Schematische Bodenkarte der Erde. Von K. D. Glinka. *Map.* [In Russian and German.]

Terrestrial Magnetism. **Schuster.**

The diurnal variation of terrestrial magnetism. By Arthur Schuster. (From the *Philosophical Transactions of the Royal Society of London*, Series A, vol. **208**.) London, 1908. Size 12 × 9, pp. 163–204. *Price* 2*s.*

Terrestrial Magnetism. *Terrestrial Magnetism* **13** (1908): 57–62. **Steiner.**

On Earth-currents and magnetic variations. By Dr. L. Steiner. *Diagrams.*

ANTHROPOGEOGRAPHY AND HISTORICAL GEOGRAPHY.

Commercial—Textiles. **Garrett.**

Fibres for fabrics. By A. E. Garrett. London: Hodder & Stoughton, [1908]. Size 8 × 5, pp. xii. and 220. *Price* 2*s.* 6*d. net. Presented by the Author.*

Ethnology. *Atti S. Italiana Progresso Sc., Parma* 1907 (1908): 232–242. **Sergi.**

Di una classificazione razionale dei gruppi umani. Del Prof. G. Sergi.

Historical. *B.S. Mexicana G.* **2** (1907); 300–304, 305–318, 358–389. **Nuttall.**

Las primeras relaciones entre Mexico y el Japon. Por Zelia Nuttall.

History of Cartography. *Riv. G. Italiana* **15** (1908): 281–290. **Mori**

Una carta nautica sconosciuta di Vincenzo di Demetrio Volcio. Appunti di Attilio Mori.

This chart, which is of date 1592, includes as inset a large-scale representation of the Adriatic.

BIOGRAPHY.

Las Casas. *Jahresber. G. Ges. Zürich*, 1907–8: 25–69. **Stoll.**

Der Bischof Bartolomé de las Casas, ein Zeitgenosse des Columbus, seine wissenschaftlichen und humanitaren Verdienste. Von Prof. Dr. Otto Stoll.

GENERAL.

Bibliography. **Baschin.**

Bibliotheca geographica. Jahresbibliographie der geographischen Literatur. Herausgegeben von der Gesellschaft für Erdkunde zu Berlin. Bearbeitet von Otto Baschin. Band xiii., Jahrgang 1904. Berlin: W. H. Kühl, 1908. Size 9 × 6, pp. xvi. and 560.

Education. *G. Teacher* **4** (1908): 209–221. **Gregory.**

Scientific method in the teaching of geography. By Prof. R. A. Gregory.

Education. *G. Teacher* **4** (1908): 221–229. **Smith.**

Physical geography as an essential part of school geography. By T. Alford Smith.

French Colonies—Cartography. **Almeida.**

Congrès Col., Bordeaux 1907 (1908): 518–522.

La cartographie des colonies françaises. Par Camena d'Almeida.

French Colonies—Congress. ——

Ministère des Colonies. Congrès Colonial de Bordeaux (4–8 Août 1907): Rapports: Communications: Vœux. Bordeaux: Institut Colonial, 1908. Size 10 × 6½, pp. 742. *Illustrations.*

Geographical Methods. *B.R.S.G. Madrid* **50** (1908): 110–186. **Ballester y Castell.**

Investigaciones sobre metodología geográfica. Por Rafael Ballester y Castell.

Geographical Research. **Dalla Vedova.**

Atti S. Italiana Progresso Sc., Parma 1907 (1908): 174–182.

Sull' oggetto e sugli uffici della Sezione VI. dell Associazione italiana por il progresso delle scienze. Del Dr. G. Dalla Vedova. *Also separate copy.* (Size 10½ × 7.)

Geography—Text-book. **Mejia.**

Geografia universal segun el procedimiento cíclico. Por Martin Restrepo Mejia. Bogota, 1908. Size 7 × 5, pp. xvi. and 312. *Presented by the Author.*

A school text-book, in the body of which the author has eschewed catalogues of names, and has aimed at giving a general description of each country and its inhabitants.

Mountain-sickness. *Appalachia* **11** (1908): 350–359. **Workman.**

Some Altitude Effects at Camps above Twenty Thousand Feet. By Dr. William Hunter Workman. *Illustrations.*

NEW MAPS.

By E. A. REEVES, *Map Curator*, R.G.S.

EUROPE.

Alps. **Frech.**

Geologische Grundlinien der Alpen. Von Prof. Dr. Fritz Frech. Scale 1:2,500,000 or 1 inch to 39·5 stat. miles. *Petermanns Mitteilungen*, Jahrgang 1908, Tafel 17. Gotha: Justus Perthes, 1908. *Presented by the Publisher.*

Austria. **Deutschen u. Oesterreichischen Alpen-Verein.**

Karte der Langkofel- und Sellagruppe; Karte der Marmolatagruppe; Karte der Allgaeuer und Lechtaler-Alpen, östliche Hälfte- und westliche Hälfte. Herausgegeben von der Deutschen und Oesterreichischen Alpen-Verein. Scale 1:25,000 or 2·5 inches to 1 stat. mile. Vienna: G. Freytag & Berndt, 1904–1908. *Presented by the Publishers.*

These tourist maps are similar in style to that of the Brentagruppe noticed in the last number of the *Geographical Journal*, and like that resemble in general appearance the sheets of the Swiss Government Survey. Contour-lines at intervals of 20 metres are given, on the lower lands in brown, and on the upper rockwork and peaks in black. Although a large amount of detail is given, the work is so finely executed that everything is perfectly legible, the form of the rocks and small ravines being remarkably clear.

Austria. **Freytag.**

G. Freytag's Touristen-Wanderkarten. Scale 1:100,000 or 1 inch to 1·6 stat. mile. Sheets: 1, Wiener Wald; 2, Schneeberg, Semmering, Raxalpe; 3, Oetscher; 4, Hochschwab; 5, Unteres Ennstal; 6, Ennstal; 7, Wachau, Kamptal, Kremstal; 8, Oestliches Salzkammergut; 9, Westliches Salzkammergut;

10, Berchtesgadnerland und Pinzgau; 11, Südliches Waldviertel und Donautal; 12, Hohe Tauern; 13, Grazer Bergland. *Prices: sheet* 12, 2.50*m.*; *all others*, 1.70*m.* Touristen-Wanderkarte der Dolomiten. Scale 1 : 100,000 or 1 inch to 1·6 stat. mile. 2 sheets. *Price* 2*m.* Karte von Mödling und Ungebung. Scale 1 : 25,000 or 2·5 inches to 1 stat. mile. *Price* 1 *kr.* Karte des Semmering und Umgebung. Scale 1 : 25,000 or 2·5 inches to 1 stat. mile. *Price* 1.20 *kr.* Vienna & Leipzig: G. Freytag & Berndt, [1908]. *Presented by the Publishers.*

A series of inexpensive maps of districts of Austria frequented by tourists, printed in colours to show relief. Heights are shown by shading and contours. Special attention has been given to railways, roads, paths, and other matters likely to be of interest to mountaineers and tourists.

England and Wales. **Ordnance Survey.**

Sheets published by the Director-General of the Ordnance Survey, Southampton, from October 1 to 31, 1908.

1-inch (third edition):—

In outline, 125, 126, 128, 169, 173, 184. 1*s. each* (engraved).
Large sheet series, printed in colours, folded in cover or flat in sheets. 39, 74, 103, 135. *Price, on paper,* 1*s.* 6*d.*; *mounted on linen,* 2*s.*; *mounted in sections,* 2*s.* 6*d. each.*

6-inch—County Maps:—

Cornwall (First Revision), 56 S.E., 63 S.W., 71 N.E. **Kent** (Second Revision), 74 S.W. **Lincolnshire** (First Revision), 5 N.W., S.W., 22 N.W., N.E., S.W. **Pembrokeshire** (First Revision), 4*a* S.E. **Yorkshire** (First Revision of 1891 Survey), 214 N.E., 215 N.W., 217 S.E., 219 N.E., 230 N.W., 232 N.W., 233 N.W., S.W., 234 S.W., 259 N.W. 1*s. each.*

25-inch—County Maps:—

Hampshire (Second Revision), LXXX. 14, 15, 16; LXXXI. 13; LXXXVII. 6, 7, 8, 12; LXXXVIII. 1, 2, 3, 4, 8, 10, 11, 14; LXXXIX. 1; XC. 14. **Kent** (Second Revision), X. 14; XVIII. 2; XXIX. 8, 12, 16; XXX. 16; XL. 10, 11; XLI. 1, 5, 9, 10; XLII. 2, 3, 7, 11; LI. 2, 16; LXI. 2, 3, 4, 10, 11, 14, 15; LXII. 13; LXX. 1, 9. **Lancashire** (First Revision of 1891 Survey), LXXXIII. 1, 5, 6, 13; LXXXIV. 3, 6, 10, 12, 13; LXXXV. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 14; XC. 8; XCII. 1, 3; XCIII. 2, 5, 6, 11, 12, 13, 14, 15, 16; XCIX. 10, 12, 13; CIII. 8. **Yorkshire** (First Revision of 1891 Survey), CLXXXII. 7, 8; CLXXXIII. 5, 6, 7, 10, 11; CLXXXV. 6, 7, 10, 11; CXC. 6, 7, 8, 10, 14, 16; CC. 2, 3, 10, 11, 13, 14, 15; CCI. 5, 7, 8, 9, 10, 12, 13, 14, 15; CCII. 9. 3*s. each.* CLXXXIII. 15, 16. 1*s.* 6*d. each.*

(*E. Stanford, London Agent.*)

England and Wales. **Geological Survey.**

4 miles to 1 inch. New Series, printed in colours. Solid Edition. Sheet 19: Bath, Guildford, Abingdon, Southampton, etc. *Price* 2*s.* 6*d.*

(*E. Stanford, London Agent.*)

Norway. **Norges Geografiske Opmaaling.**

Topografisk Kart over Kongeriget Norge. Scale 1 : 100,000 or 1 inch to 1·6 stat. mile. Sheet 10 A. Hvaler. Christiania: Norges Geografiske Opmaaling, 1908. *Presented by the Norwegian Geographical Institute.*

Turkey. **Topographical Section, General Staff.**

Map of Turkey. Scale 1 : 250,000 or 1 inch to 3·9 stat. miles. Sheets: Gallipoli, Mount Athos, Salonika. London: Topographical Section, General Staff, War Office, 1908. *Price* 2*s.* 6*d. net each sheet. Presented by the Director of Military Operations.*

ASIA.

Japan. **Imperial Geological Survey, Tokyo.**

Topographical map of Japan. Scale 1 : 200,000 or 1 inch to 3·2 stat. miles. Sheets: Aomori, Hitoyoshi, Kamiagata, Sendai, Shimonagata, Suōnada, Wajima. Tokyo: Imperial Geological Survey of Japan, 1907-08. *Presented by the Imperial Geological Survey of Japan.*

AFRICA.

Algeria. **Service des Cartes et Plans de l'Algérie.**

Carte de l'Algérie. Dressée par ordre de M. Jonnart. Gouverneur-Général de l'Algérie au Service des Cartes et Plans du Gouvernement de l'Algérie. Scale 1 : 200,000 or 1 inch to 3·2 stat. miles. Sheet 3, Miliana. Algiers: Service des Cartes et Plans du Gouvernement Général de l'Algérie, [1908]. *Price* 1 *fr. each sheet. Presented by M. R. de Flotte Roquevaire, Chef du Service des Cartes et Plans du Gouvernement Général de l'Algérie.*

Dahomey. **Meunier.**

Carte du Dahomey. Dressée par A. Meunier. Scale 1 : 500,000 or 1 inch to 7·8 stat. miles. 3 sheets. Paris: Ministère des Colonies, 1908.

This map of Dahomey has been drawn from the surveys and route-traverses of French administrators and officers, of which a list is given under the title. In many parts the country is still unmapped, and much of the topography that is shown is necessarily only based on approximate sketches. The map is printed in colours, and shows the result of survey work up to date.

Egypt. **Survey Department, Cairo.**

Orographical map of the Nile Basin. Scale 1 : 2,500,000 or 1 inch to 39·5 stat. miles. 6 sheets. Cairo: Survey Department, 1908. *Presented by the Director-General, Survey Department, Cairo.*

The excellent work of Captain H. G. Lyons, F.R.S., the director of the Egyptian Survey Department, is well known, and his investigations of the region of the Nile are of special value, as may be judged by the instructive paper that has recently been published in the *Geographical Journal*. During these investigations he has naturally paid considerable attention to the land-relief of this part of Africa, and the information gained has thrown fresh light on the orography of certain districts hitherto somewhat erroneously indicated on maps. The orographical wall-map of the Nile basin just published is based upon recent researches, combined with other reliable information, and extends from Victoria Nyanza and the upper part of Tanganyika to the Mediterranean, thus including the whole area drained by the Nile and its tributaries. Relief is shown by a combination of hill-shading and colour-tinting. Land from sea-level to 250 metres is left white, and then, from 250 metres to 2000 metres and over, the height of land is indicated by four shades, ranging from yellow to a reddish-brown, the intervals being 250 to 500 metres, 500 to 1000 metres, 1000 to 2000 metres. Land below sea-level is shown in green, and depths of water by tints of blue. Vertical sections across the region in various directions are given at the foot of the map, which add considerably to its interest. Three important inset-maps of the Nile valley are given on the scale of 1 : 7,500,000, one showing political divisions, another the distribution of vegetation, and the third the distribution of rainfall. The map measures altogether 7 feet by 4½ feet, and is boldly printed, so that it can be clearly read when hanging on a wall.

Egypt. **Stanton.**

Provisional map of Khartoum City, Khartoum North, and Omdurman. Compiled for use of the Khartoum Mudiria by Lieut.-Col. E. A. Stanton, Governor Khartoum Province. Scale: 1 : 253,440 or 1 inch to 4 stat. miles. 2 sheets.

This is a new edition.

German East Africa. **Moisel.**

Deutsch-Ostafrika. Neubearbeitung von M. Moisel. Scale 1 : 2,000,000 or 1 inch to 31·6 stat. miles. Berlin: Dietrich Reimer (E. Vohsen), 1908.

Sierra Leone. **Topographical Section, General Staff.**

Sierra Leone Peninsula. Scale 1 : 63,360 or 1 inch to 1 stat. mile. London: Topographical Section, General Staff, War Office, 1908. *Price* 2*s.* 6*d.* ***Presented by the Director of Military Operations.***

Transvaal—Pretoria. **Topographical Section, General Staff.**

Map of Pretoria and surrounding country. Scale 1 : 63,360 or 1 inch to 1 stat. mile. London: Topographical Section, General Staff, War Office, 1908. *Price* 2*s.* 6*d.* ***Presented by the Director of Military Operations.***

AMERICA.

Argentine Republic. **Buenos Aires Great Southern Railway Company.**

Buenos Aires Great Southern Railway and Connections, 1908. Scale 1 : 2,000,000

or 1 inch to 31·6 stat. miles. London: The Buenos Aires Great Southern Railway Company, 1908. *Presented by the Buenos Aires Great Southern Railway Company.*

An outline map of Central Argentina and the adjacent part of Chile, showing railways and railway systems from Buenos Aires, with proposed extensions in different colours. The map includes that part of South America from 31° to 42° S. lat. Four plans on enlarged scales are given as insets.

Brazil—S. Paulo. **Commissão Geographica e Geologica de S. Paulo.**

Carta Topographica do Estado de S. Paulo. Scale 1 : 100,000 or 1 inch to 1·6 stat. mile. Sheet: Ouro Fino. S. Paulo: Commissão Geographica e Geologica de S. Paulo, 1908. *Presented by the Commissão Geographica e Geologica de S. Paulo.*

Brazil—S. Paulo. **Commissão Geographica e Geologica de S. Paulo.**

Carta Geral do Estado de S. Paulo. Organisada pela Commissão Geographica e Geologica, Eng. João Pedro Cardoso, Chefe. Scale 1 : 1,000,000 or 1 inch to 15·8 stat. miles. S. Paulo: Commissão Geographica e Geologica de S. Paulo, 1908. *Presented by the Commissão Geographica e Geologica de S. Paulo.*

Chiefly useful as indicating the present condition of railway development in the state of S. Paulo. Rivers are shown in blue, but apart from the names of the ranges there is no indication of hills.

Brazil. **Levasseur.**

Mappa da Republica dos Estados-Unidos do Brazil. Por E. Levasseur. Scale 1 : 3,000,000 or 1 inch to 47·3 stat. miles. 12 sheets. Paris: C. Delagrave, 1908.

A very roughly drawn map, lithographed in colours, upon which useful information will be found. It is evidently intended to serve as a wall-map, for which purpose important names, boundaries, and main physical features are boldly shown; but, in addition, a considerable amount of detail and many less-important names are given in small symbols and letters, only legible upon close inspection.

Canada. **Topographical Section, General Staff.**

Map of Canada. Scale: 1 : 63,360 or 1 inch to 1 stat. mile. Sheets: 14, Ottawa; 15, Kemptville. London: Topographical Section, General Staff, War Office, 1908. *Price 2s. each sheet. Presented by the Director of Military Operations.*

South America. **Bartholomew.**

Commercial map of South America. By J. G. Bartholomew, F.R.G.S. Revised by John Samson, F.R.G.S., of the *South American Journal*. Scale 1 : 10,000,000 or 1 inch to 157·8 stat. miles. Edinburgh: John Bartholomew & Co., 1908. *Price, mounted on cloth, 3s. net. Presented by the Publishers.*

A new edition of a well-known map of South America, specially useful as showing railways and navigability of rivers. As regards the former, however, further revision is necessary, as instanced by the fact that a railway is shown running round the southern shore of Lake Titicaca which does not yet exist, whilst the line from the south-east shore of the lake to Puno is not indicated at all.

United States—Kentucky. **Filson.**

The First Map of Kentucky, by John Filson. A Bibliographical Account with Facsimile Reproduction from the Copy in the Library of Congress. By P. Lee Phillips. Washington: W. H. Lowdermilk & Co., 1908.

John Filson, the author of this map, was born in 1747, and was killed by Indians in 1788 while prospecting for a town which afterwards became Cincinnati. This map holds an important place in the early cartography of North America, not only from the fact that it was the first map of Kentucky, but also on account of its close association with General Washington, to whom it was dedicated by the author, and to Colonel Daniel Boone, who assisted considerably in its preparation. Great trials and difficulties had to be undergone by John Filson in order to obtain the information for the construction of his map, and many wearisome journeys were undertaken, which at that early date were not unattended with considerable risk; but at length it was finished, and, with his history of Kentucky, was first issued in 1784. As there was no printing-press or method of engraving at that date west of the Alleghanies, Filson journeyed to Welmington, Delaware, where his book was printed by John Adams, and the map was taken to Philadelphia, where it was engraved by H. D. Purcell, and printed by T. Rook. The reproduction which Mr. P. Lee Phillips has just issued, with explanatory text, is well executed, and will be welcomed by all interested in the history of the United States, especially as the map is decidedly rare, notwithstanding a French reproduction, with the text of the history, and an English reprint, published by Stockdale of London in 1793. Several maps of Kentucky on reduced scales have appeared at different dates, based on Filson's map.

GENERAL.

World. **Canerio.**

Marine Chart of the World, 1502 (*circa*), by Nicolo de Canerio Januensis. Facsimile edited by Edward Luther Stevenson, PH.D., and issued under the joint auspices of the American Geographical Society and the Hispanic Society of America. New York, 1907. *Price* $20.

This is the second of the important series of facsimiles of early maps having a special bearing on the discovery of America, which is now being edited by Prof. E. L. Stevenson, and published under the joint auspices of the American Geographical Society and the Hispanic Society of America. A chronological order is not being followed in the publication of these facsimiles, but it is interesting to note that, while the first to appear, that of the World by Jodocus Hondius, exhibits the scope of geographical knowledge possessed at the beginning of the seventeenth century, the present chart shows the extent of that knowledge in the first years of the sixteenth century.

Although portions of this interesting old chart have been previously reproduced, and some years ago the French Government had a few photographs of the whole chart printed, this is the first time that any serious attempt has been made to produce a facsimile on the size of the original, and the result attained is decidedly satisfactory considering the condition of the parchment. Nothing is definitely known of the author of the chart except his name, which appears in the lower left-hand corner, but it is probable that he was one of a number of Italians who found employment as map-makers in Portugal or in Spain in the early years of the discovery of the New World. Nor is the date fixed with certainty; but as there is no original entry of a discovery after 1502, that date has been accepted as approximately correct.

The original from which this facsimile has been made was found in the Archives du Service Hydrographique de la Marine, Paris, where it remains at the present time; and due acknowledgment is made by Prof. Stevenson in the "Critical Study" which he has written to accompany the chart, to M. Hanusse, the director of the Archives du Service Hydrographique, and others who have assisted him in producing this facsimile.

In general appearance this interesting chart resembles other "portulani" of about the same period, but in several particulars it bears striking likeness to the well-known "Cantino" chart. The original is drawn on coarse parchment made up of several sheets joined together. It measures 88 inches by 45 inches, including its border. The work of reproduction by photography has been more than usually difficult owing to the crinkled and bad condition of the parchment. The "Critical Study" gives much interesting information concerning the chart, including a list of the names found upon it compared with those upon the Cantino chart and the Waldseemüller charts of 1507 and 1516. It also gives small photographic reproductions of a few other maps of the fourteenth, fifteenth, and early sixteenth centuries.

World. **Schrader.**

L'Année Cartographique. Supplément Annuel à toutes les publications de Géographie et de Cartographie. Dressée et rédigé sous la direction de F. Schrader. Cette dix-huitième année contient les modifications géographiques et politiques de l'année 1907. Paris: Hachette et Cie., 1908. *Price* 3 *fr.*

This useful little cartographical annual has now reached its eighteenth year of issue. It consists of three separate sheets of maps illustrative of the principal geographical expeditions in Asia, Africa, and America that have taken place during the year 1907, with explanatory and descriptive text on the back. On the Asia sheet there are five maps, of which the more important are a hypsometrical sketch of Asia Minor, showing heights by five different colour tints, based upon Dr. Richard Kiepert's large map on the scale of 1:400,000, and another showing the new frontier between Siam and Cambodia, from the survey of the Boundary Commission, 1904–07. The Africa sheet contains altogether six maps, the more important being that of the boundary between French Congo and Kamerun; recent French surveys in southern Algeria and Morocco; and a sketch showing the new territorial divisions in southern Algeria. On the America sheet are four maps showing the new frontier between Bolivia and Brazil, the frontier between Colombia and Brazil, according to the arrangement of April 24, 1907, and another giving the results of the recent explorations in the western part of the state of São Paulo, Brazil, by the Geographical and Geological Commission, 1905–07.

CHARTS.

Admiralty Charts. **Hydrographic Department, Admiralty.**

Charts and Plans published by the Hydrographic Department, Admiralty, during September, 1908. *Presented by the Hydrographer, Admiralty.*

New Charts.

No.	Inches.	
3708 m =	2·8	Norway, Christiana fiord:—Drams fiord and Sande bugt. 4*s.*
3711 m =	4·8 9·7 9·0	North American Lakes. Plans in Lake Erie:—Erie harbour, Ashtabula harbour, Fairport. 3*s.*
3705 m =	3·2 6·3	Alaska, Chatham strait:—Bay of Pillars, Washington bay. 3*s.*
3693 m =	var.	Plans in Lake Victoria Nyanza:—Munyonyo, Mizinda bay, Bukoba road, Lubembe harbour, Namaungu, Shirati bay. 3*s.*
3701 m =	2·4 2·0	Liu Kiu islands. Plans in Okinawa group:—Iheya islands, Kerama kaikyo. 3*s.*
2416 m =	0·35	Liu Kiu islands:—Okinawa group. 3*s.*

Charts Cancelled.

No.	Cancelled by	No.
2416 Liu Kiu islands. Plan:—Kerama channel and anchorages.	New chart.	
	Okinawa group	2416
	Plan of Kerama kaikyo on new chart . .	3701

Charts that have received Important Corrections.

No. 1404, Scotland, west coast:—Ardrossan harbour. 2832, Scotland, west coast:—Treshnish point to the entrance of the sound of Mull. 3384, Ireland, south coast:—Queenstown. 201, Adriatic sea:—Sheet I. 1238, Atlantic islands:—South Shetland and South Orkney islands. 2282, Arctic sea:—Arctic ocean and Greenland sea. 373, Plans in the Gulf of Mexico. 1324, South America, east coast:—Rio de la Plata to Cape Dos Bahias. 23, Chile:—Channels between Magellan strait and Gulf of Trinidad. 2839, United States, west coast:—Columbia river.

(*J. D. Potter, Agent.*)

Indian Ocean and Red Sea. **Meteorological Office.**

Monthly meteorological charts of the Indian Ocean north of 15° S. lat. and Red Sea, November, 1908. London: Meteorological Office, 1908. *Price 6d. each. Presented by the Meteorological Office.*

North Atlantic. **U.S. Hydrographic Office.**

Monthly meteorological charts of the North Atlantic and Mediterranean, November, 1908. London: Meteorological Office, 1908. *Price 6d. each. Presented by the Meteorological Office.*

North Pacific. **U.S. Hydrographic Office.**

Pilot chart of the North Pacific Ocean, November, 1908. Washington: U.S. Hydrographic Office, 1908. *Presented by the U.S. Hydrographic Office.*

Norway. **Norges Geografiske Opmaaling.**

Kystkarter. Scale 1 : 50,000 or 1·3 inch to 1 stat. mile. Specialkart B 59, Landegode til Kjerringö og Leines. Specialkart B 78, Grylleford og Bergsfjord til Hekkingen. Christiania: Norges Geografiske Opmaaling, 1908. *Presented by the Norwegian Geographical Institute.*

N.B.—It would greatly add to the value of the collection of Photographs which has been established in the Map Room, if all the Fellows of the Society who have taken photographs during their travels, would forward copies of them to the Map Curator, by whom they will be acknowledged. Should the donor have purchased the photographs, it will be useful for reference if the name of the photographer and his address are given.

Published by the Royal

45
50
55
60
40
35
30
25
20
15
CAUCASIA
L. Sevan (Gokcha)
Erivan
Araxes
Julfa
Baku
CASPIAN SEA
Krasnovodsk
Kizil Arvat
R. Atrek
Merv
Hari Rud
L. URMIA
Resht
ELBURZ MOUNTAINS
TEHRAN
Hamadan
Kum
Kermanshah
LURS
BAKHTIARIS
PERSIA
Basra
L. Niriz
Kowet
Bushire
PERSIAN GULF
Wadi Rumah
Bandar Abbas
Strait of Ormuz
Ras Musundam
Bahrein Is.
Hofuf
Mubarrez
El Katr
GULF OF OMAN
Birama
Maskat
Riad
Kharj
Hauta
Harik
Aflaj
YEMAMA
Wadi Yabrin
Wadi Dawasir
OMAN OR MASKAT
Ruba el Khali or Dahna
(Great Sandy Desert)
Najran
El Ahkaf
HADRAMAUT
Kuria Muria Is
Shibam
Marib
Sanaa
ARABIAN SEA
Socotra
ADEN
GULF OF ADEN

101° 102°

32°

31°

30°

29°

101° 102°

CHINA

Part of the Province of
SE-CHUAN
from a Plane Table sketch
by
W. N. FERGUSSON
1906-7.

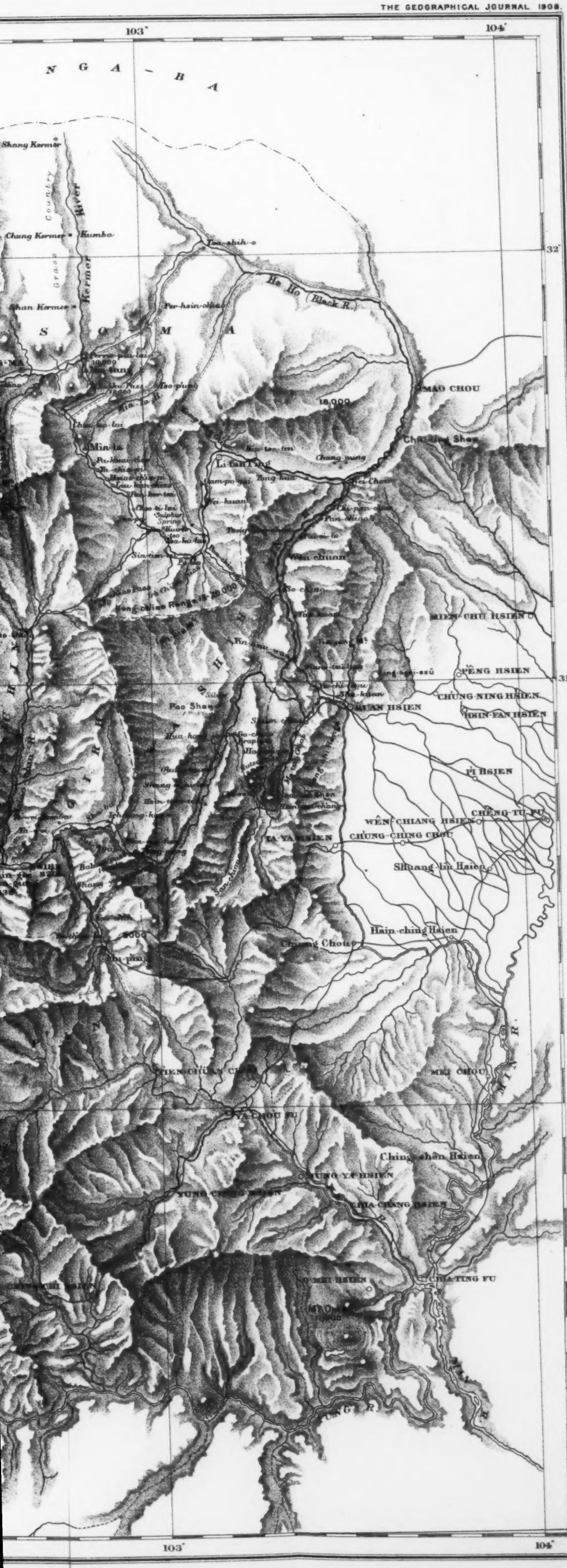
Adjusted to the War Office Map of Se-chuan
N° 2040.

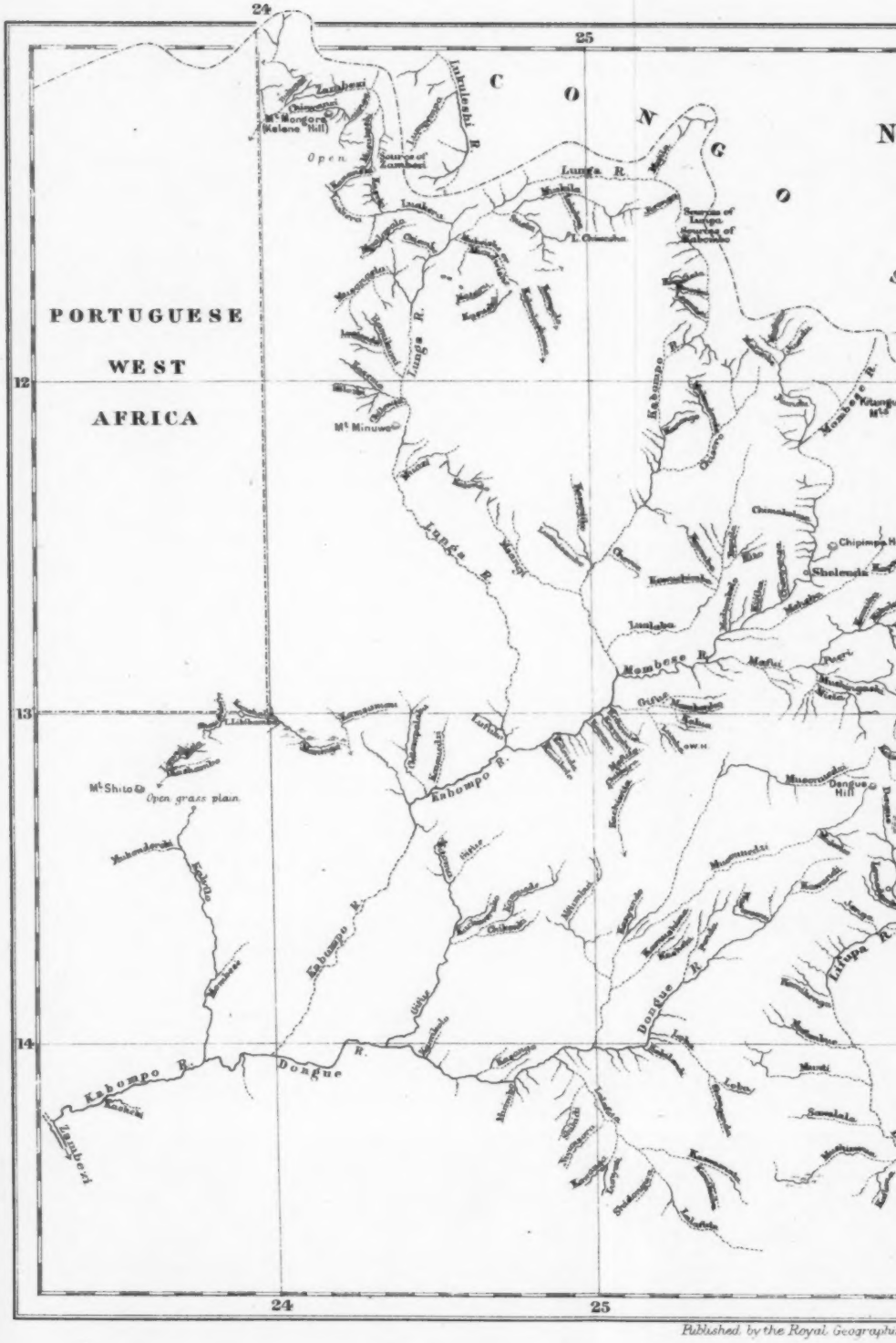
Nat. Scale 1 : 1,000,000 or 1 Inch = 15·78 Stat. Miles.

10 5 0 10 20 30 Miles

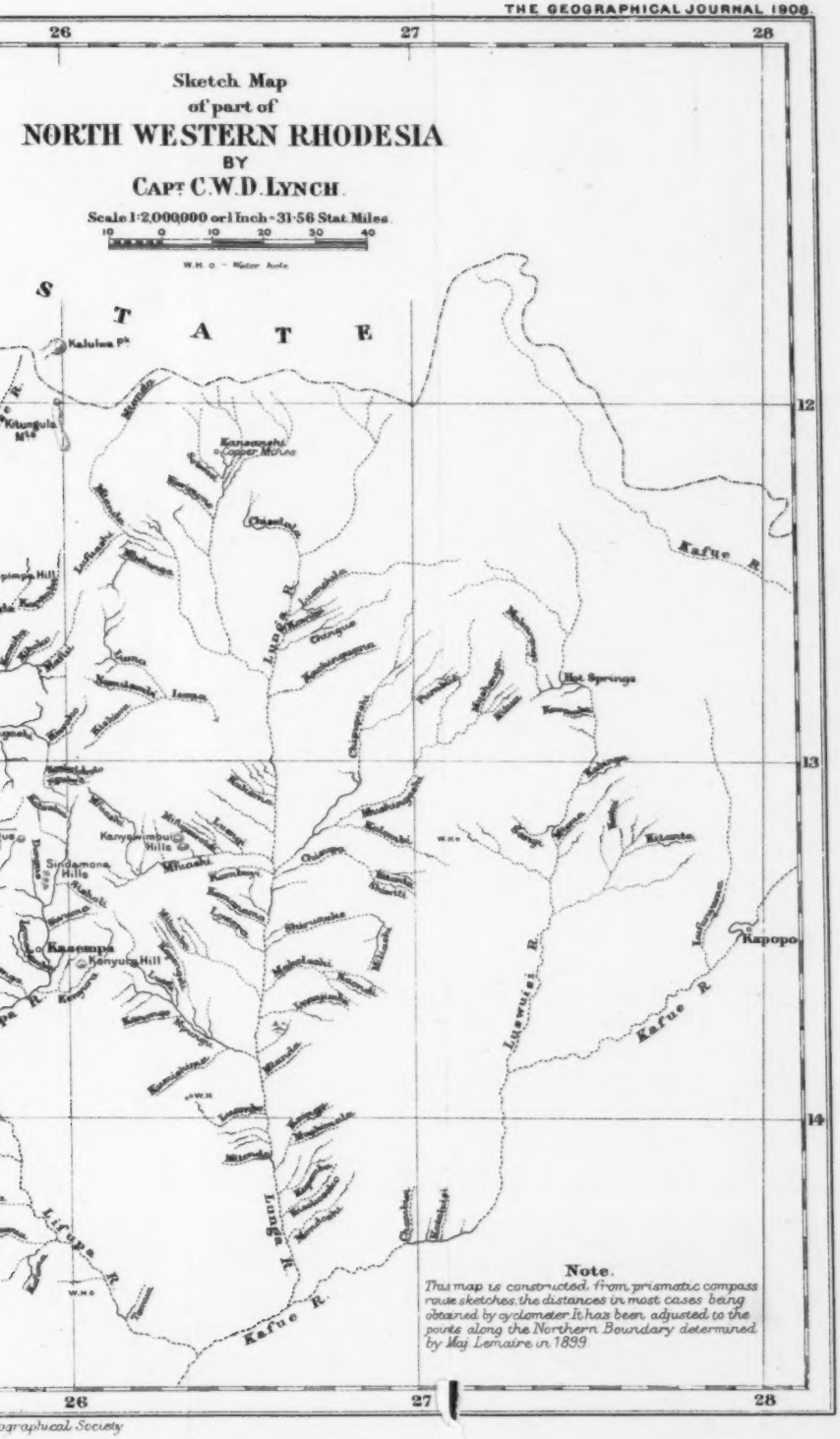
Route .....
Roads .....
Boundaries of tribes .....
Palace .....
Lamasary .....
Village .....
Heights in feet from Barometer and boiling point readings.

Published by the Royal Geog


103°
104°
32°
31°
30°
29°
N G A - B A
Shang Kermer
Chung Kermer
Kamba
Kermer River
Grass Country
Tao-shih-o
He Ho Black R.
Par-hsin-chiao
S O M A
Shan Kermer
Tao-pien
18,000
MAO CHOU
Chang pung
Min-la
Li-fan Ting
Pei-Chen
Pien-chuan
Chi-pen-chiao
Pien chiang
Sulphur Spring
Tao-chiang
Hsiao Pien
Hong-chiao Rong
20,000
Pao Shan
Hua-ka
Shang Kermer
Tsha-kou
Shuang-chiang
Shuang-kuan
Go-chiang
Graphite
Hsiao-ho
Hsiao-ho-tsun
Shuang-kuan



Published by the Royal Geographi



Note.

This map is constructed from prismatic compass route sketches, the distances in most cases being obtained by cyclometer. It has been adjusted to the points along the Northern Boundary determined by Maj. Lemaire in 1899.

INDEX.

* Denotes Articles and Papers. † Bibliographical Entry.
§ Reviews and Notices.

A.

Abbe, C., Comprehensive maps and models of the globe for special meteorological studies, 208 †; First report on relations between climates and crops, 642 †
Abbot, C. G., and F. E. Fowle, Annals of Astrophysical Observatory of Smithsonian Institution, vol. 2, 441 †
Abendanon, E. C., Overzicht der geographie en geologie van het "Roode Bekken" in de provincie Se-tsjoean, 436 †
Abraham, A. P., Rock Climbing in Skye, 175 §, 200 †
Abruzzi, In the: A. Macdonell, 538 †, 617 §
Abyssinia—
  About Abyssinian Alps: G. Wherry, 106 †
  Boundary between Abyssinia and British East Africa, Agreement of 1907..621
  Dizionario della lingua cafficio: F. G. Bieber, 202 †
  Expedition to Addis Abbaba, Notes on: J. I. Craig, 106 †
  Frontiere tra l'Abissinia e la Somalia e Dancalia italiane: A. Blessich, 540 †
  Maps: Kaffa. Routen der Expeditionen des Freiherrn v. Mylius: F. J. Bieber, 214 †; Map of (Top. Section, General Staff), 547 †
  Rainfall of, 453–455
  Reise zum Berg Zuquala, etc.: L. de Castro, 638 †
  Rerum Æthiopicarum Scriptores Occidentales inediti a Sæculo xvi. ad xix.: C. Beccari, 436 †
Acarigua, Venezuela, 332
Adams, J. H.: *see* Fraser, C.
Addis Abbaba—
  Expedition to Addis Abbaba, Notes on an: J. I. Craig, 106 †
Adler, M., Du Cap à Banana à travers l'Afrique australe, 638 †
Admiralty Charts, 119 †, 326 †, 447 †, 547 †, 648 †
Admiralty Surveys during 1907, Summary of Report, 69
Adrar—
  Mission dans l'Adrar du Niger: Captain Dinaux, 638 †
Adrar des Ifor'ass: M. A. Cortier, 319 †
Adriatic sea—
  Entstehung und Geschichte des Adriatischen Meeres: A. Grund, 102 †
Æolian deposits—
  Stratification dans les dépôts éoliens: A. Ivchenko, 440 †
Aflaj district, Arabia, 551
Africa—
  African Nature Notes and Reminiscences: F. C. Selous, 612 §
  Afrique Centrale Française: A. Chevalier, 73 §
  Boundary surveys, 531
  British, Surveys and Mapping of, 393
  British East—
    Boundary between Abyssinia and British East Africa, Agreement of 1907..621
    Geology of, Report relating to: H. B. Muff, 107 †
    Journey in the Country south of the Tana River, Captain Aylmer's, 55 *
    Man-eaters of Tsavo, and other East African adventures: J. H. Patterson, 318 †
    Topographical Surveys in, 397
  Cap à Banana à travers l'Afrique Australe: M. Adler et A. J. Wauters, 638 †
  Central—
    Expedition S. H. des Herzogs A. F. zu Mecklenburg-Schwerin, 306 §, 540 †
    Pen and picture account of visit to Central Africa: F. S. Arnot, 203 †
    Tramps round the Mountains of the Moon: T. B. Johnson, 318 †
    Zentralafrikanische Expedition des Herzogs A. F. zu Mecklenburg-Schwerin, 86 §, 203 †, 436 †
  Desséchement de l'Afrique française et il démontré? J. Lahache, 202 †
  East—
    East Africa Protectorate, Report relating to geology of: H. B. Muff, 107 †
    Journey in Country south of Tana River, Captain Aylmer's, 55 *
  Expeditions in Africa, progress of, 4
  First Circuit round Africa and supposed Record of it: W. M. F. Petrie, 480 *

Africa—*continued.*
German East—
Erwerbung von Deutsch-Ostafrika: J. Graf v. Pfeil, 169 §
Ostafrikanische Expedition der Otto Winter-Stiftung: C. Uhlig, 107 †
Sogenannte Grosse Ostafrikanische Graben: C. Uhlig, 107 †
Triangulation und Messtisch-Aufnahme des Ukinga-Gebirges: E. Kohlschütter, 107 †
Vorläufiger Bericht über eine Forschungsreise in das abflusslose Gebiet Deutsch-Ost-Afrikas: F. Jaeger, 203 †
German South-West—
Deutsche Kolonialwirtschaft. I. Band: P. Rohrbach, 522 §
Elf Jahre Gouverneur in Deutsche Südwestafrika: T. Leutwein, 169 §
Expedition in, Dr. Pöch's, 532
Klima von Swakopmund: A. Gülland, 107 †
Southern Railway in, 309
Grasbrände, Periodischen, im tropischen Afrika: W. Busse, 429 §, 436 †
Handelsstrassen und Handelsmittelpunkte an den Afrikanischen Küsten des roten Meeres und des Golfes von Aden: D. Kürchhoff, 541 †
Maps: Deutsch Ostafrika: M. Moisel, 645 †; Gliederung Afrikas nach physikalischen und wirtschaftlichen Gesichtspunkten: S. Passarge, 325 †
Missions d'Afrique des Pères Blancs: F. Ricard, 106 †
Peuplement européen dans l'Afrique Mineure: P. P. Valot, 204 †
Ruwenzori to Congo, From: A. F. R. Wollaston, 613 §, 638 †
South—
Geodetic Survey of South Africa: Sir W. G. Morris and others, 319 †
History of South Africa since September, 1795: G. McC. Theal, 541 †
Südafrika: Eine Landes-, Volks- und Wirtschaftskunde: S. Passarge, 75 §
Tektonik der südafrikanischen Küsten: S. Passarge, 639 †
Trade and shipping of colonies forming South African Customs Union, First annual statement of, 1906.. 319 †
West—
Coast-bars, H. Hubert's study of, 185
Frontières de la côte d'Ivoire de la côte d'Or et du Soudan: M. Delafosse, 296 §
Leo Frobenius' Forschungsreise in das Niger-Gebiet, 541 †
Loango-Expedition, 1873–1876: P. Güssfeldt and others, 204 †
Traité franco-libérien, 205 †
Agnese, Baptista—Atlante manoscritto de Battista Agnese della Biblioteca Reale di Torino: A. Magnaghi, 443 †
Akamba tribe, East Africa, 59
Alaska—
Boundary Demarcation Reports: W. F. King and O. H. Tittmann, 532, 639 †
Reconnaissance and preliminary survey of land route . . . in Alaska for mail and pack trail, Report on: J. L. McPherson, 108 †, 187 §
Smithsonian exploration in Alaska in 1907 in search of Pleistocene fossil vertebrates: C. W. Gilmore, 437 †
Top of the Continent, To the: F. A. Cook, 614 §
Water-supply investigations in Alaska: F. F. Henshaw and C. C. Covert, 437 †
Albania—
Gebirge des nordwestlichen Albaniens: T. A. Ippen, 539 †
Albert Edward Lake, Researches in neighbourhood of, by Duke of Mecklenburg, 86
Albert Edward, Mount, British New Guinea, 268, 269
Albert Nyanza—
Escarpment of, 490
Levels, Relative, of Victoria and Albert Nyanzas: R. C. Allen, 85
Alberta—
Glaciers in Alberta and British Columbia, Observations made in 1907 on: G. and W. S. Vaux, 205 †
Aldabra islands, Indian ocean, 81
Aleppo, District between Euphrates and, 562
Alexander, B., remarks on receiving medal, 96
Algeria—
Frontière algero-marocaine: A. Bernard, 541 †
Maps: Carte de l'Algérie (Gouv. Général de l'Algérie), 325 †, 645 †; Departement d'Oran. Carte des Voies de Communication (Gouv. Général de l'Algèrie), 214 †
Recensement de 1906 en Algérie et en Tunisie: A. Bernard, 106 †
Alidade—
Distance-finder Alidade for Plane-table: E. A. Reeves, 607
Allen, R. C., Relative levels of Victoria and Albert Nyanzas, 85
Almagià, R., Studi geografici sulle frane in Italia, 199 †
Almeida, C. d', Cartographie des colonies françaises, 643 †
Almonte, E. d', Demarcación de la frontera septentrional de la Guinea Continental Española, 541 †; Excursion effectuada en Fernando Póo, 541 †
Álookooloop Indians, Patagonia, 593
Alpine Club, Fifty Years of: C. Pilkington, 115 †
Alps—
Alps in, Nature and History: W. A. B. Coolidge, 314 †, 414 §
Altitude de la ligne des neiges et son

Alps—*continued.*
relèvement actuel dans les Alpes de la Savoie: P. Mougin, 197 †
Bau der Schweizeralpen: A. Heim, 197 †
Bild und Bau der Schweizer Alpen: C. Schmidt, 102 †
Climbers' Guides. Bernese Oberland: H. Dübi, 314 †
Geographie der zeitweise bewohnten Siedlungen in den Alpen: R. Sieger, 102 †
Maps: Geologische Grundlinien der Alpen: F. Frech, 643 †
Phanérogames et cryptogames vasculaires . . . dans les districts du Mont-Cenis, de la Savoie, etc., Liste des: H. S. Thompson, 102 †
Settlement of Alps and Karst Lands, History of: O. Jauker, 180
Temperature in Swiss Alps, Vertical Distribution of: J. Maurer, 423
Zermatt, Valley of, and Matterhorn: E. Whymper, 314 †
Alsace—
Sundgau, Der: F. Tschaeche, 83 §, 198 †
Altitude, Effects at Camps above Twenty Thousand Feet: W. H. Workman, 643 †
Amazon Basin—
Exploraciones de los hermanos Reyes en la hoya amazónica: J. M. Rosales, 206 †
Ocean character of the Amazon basin, 76
Ambrosetti, J. B., Exploraciones arqueólogicas en la ciudad prehistórica de "La Paya," 438 †
America, Central—
Map of (Top. Section, General Staff), 547 †
America, North—
Carte géologique international de l'Amérique du Nord: E de Margerie, 108 †
Fauna and its Origin, American: J. Lobley, 437 †
Journeys of Observation: T. A. Rickard, 303 §
Karten von Amerika in dem Isolario General des Alonso de Santa Cruz, Cosmógrafo Mayor des Kaisers Karl v.: F. R. v. Wieser, 541 †
One season's game-bag with the camera: G. Shiras, 437 †
America, South—
Altitudes y Canalización: A. Rodríguez del Busto, 543 †
Andean tableland, W. Knocke's expedition to the, 533
Antille alle Guiane e all' Amazzonia: G. Ronca, 438 †
Archhelenis und Archinotis: H. von Ihering, 169 §
Bolivar's Great March, On Route of: H. Bingham, 329 *
Expeditions: P. H. Fawcett's, 4
Maps: Commercial Map of South America: J. G. Bartholomew, 646 †
Niederschlagsverhältnisse von Südamerika: E. L. Voss, 76 §
Americanists—
International Congress of Americanists at Vienna, Sixteenth: Sir C. R. Markham, 376
Amharic—
Initia Amharica: an introduction to spoken Amharic: C. H. Armbruster, 318 †
Amundsen, R., North-West Passage, 171 §, 439 †; Proposed expedition across North Polar sea, 625
Anderson, T., Report on eruptions of Soufrière in 1902, etc., 206 †, 640 †
Anderssan, J. G., Contributions to geology of Falkland Islands, 206 †; Timmertransporten på de svenska vattendragen och dess geografiska förutsattningar, 181 §, 199 †
Andes—
Vergletscherung der Cordilleren des tropischen Südamerika: W. Sievers, 206 †
Andrews, A. W., and Dickinson, B. B., Macmillan's Orographical Map of Europe, 445 †; Notes on orographical Map of Europe, 538 †
Angola—
Riqueza petrolifera d'Angola: J. C. da Costa, 638 †
Angus, H. C., Geographical distibution of labour, 114 †
Anlezy, Cte. de D. d': *see* Boyer, A.
Année Cartographique: F. Schrader, 647 †
Antarctic—
Expeditions—
Belgian: Expédition Antarctique Belge. Résultats du voyage du S.Y. *Belgica* en 1897–1899..439 †
British: E. H. Shackleton's, 2; National Expedition, 1901–1904: Biological results, 28; Charts: G. F. A. Mulock, 439 †; Geological results, 26; Meteorology. Part I., 543 †; Natural History: vol. 4, Zoology, 543 †; Physical observations, with discussions by various authors, 543 †; Scottish: Scientific Results of, 36; W. S. Bruce's remarks on, 510
French: Expedition Antarctique Française, 1903–1905; Sciences naturelles, Documents scientifiques: J. Charcot and others, 543 †; J. Charcot's, 2, 189, 311
German: Biological results, 32; Deutsche Südpolar-Expedition, 1901–1903: E. von Drygalski, 207 †, 439 †, 543 †
Swedish: Scientific Results, 42; Wissenschaftliche Ergebnisse der Schwedischen Südpolar-Expedition, 1901–1903: O. Nordenskjöld and others, 207 †
Glaciation antarctique: C. Rabot, 111 †
Pflanzenwelt der Antarktis, Die untergegangene: F. W. Neger, 439 †

Antarctic—*continued.*
Scientific Results of the Antarctic Expeditions, 1901–1904: J. W. Gregory, 25 *
Anthropogeography—
Geographie des Menschen: A. Hettner, 114 †
Introduction géographique à l'étude de l'économie politique: P. Clerget, 114 †
Oceans and enclosed seas; a study in Anthropogeography: E. C. Semple, 442 †
Verhältnis von Natur und Mensch in der Anthropogeographie: O. Schlüter, 114 †
Antioch—
Voie romaine d'Antioche à Ptolemais: P. R. Monterde, 638 †
Apennines—
Struttura dell' Appennino, Di Alcune recenti idee sulla: A. Martelli, 435 †
Apianus—
Technik der Apianischen Karte von Bayern: M. Gasser, 103 †
Appalachian Mountain system, Physiographic Subdivisions of: W. M. Davis, 508
Apure river, Venezuela, 336
Arabia—
Ausflüge in der Arabia Petræa: B. Moritz, 637 †
Maronites, Mazonitai, et Mazoun du 'Oman: P. H. Lammens, 637 †
Northern, A. Musil's Expedition in, 528
Unknown parts of, 550, 564
Arago, F., Correspondence d'Alexandre de Humboldt avec: E. T. Hamy, 211 †
Aranha, B., O Marquez de Pombal e o seu centenario, 443 †
Arauca, Colombia, 338
Arctic—
Comatulids of the, 604
Danske Arktiske Station, Foreløbig Beretning om Rejsningen af den: M. P. Porsild, 111 †
Eskimo methods of winter travelling in scientific exploration, Suitability of: V. Stefansson, 440 †
Expédition arctique russe de 1905: E. Blanc, 641 †
Expeditions: R. Amundsen's proposed, 625; A. H. Harrison's, 3; E. Mikkelsen's, 3; R. E. Peary's, 189; K. Rasmussen's and F. A. Cook's, 535
Forschungsreisen in das Nordpolarmeer, Aus frühern und neuern: M. Lindeman, 641 †
Hydrographical expedition to northern polar ocean, Sketch of work of: D. Poliloff, 113 †
Ice in Arctic Seas, 1907, State of: V. Garde, 111 †
Lebensverhältnisse und den Fang der nordischen Seehunde: J. Hjort und N. Knipowitsch, 111 †
Log of the *Laura* in Polar Seas: B. F. Holmes, 177 §, 208 †
Arctic—*continued.*
Meteorological and Hydrographical Observations made in 1905 on Steamship *Pakhtusof*, 111 †
North-West Passage: R. Amundsen, 171 §, 439 †
Ozeanographie der Nordeuropäischen Meere im Anschluss an Nansens "Northern Waters": P. Perlewitz, 208 †
Plan for en ny polar ekspedition: G. Isachsen, 111 †
Polar Continent, In search of a: A. H. Harrison, 615 §
Polarreisen und die nordwestliche Durchfahrt, Neusten: E. von Drygalski, 641 †
Sondages d'eau de mer profonde du Capitaine Hegemann, Liste inédite de: J. Denucé, 113 †, 440 †
Température des eaux marines arctiques faites pendant les campagnes du yacht *Princesse Alice*: J. Richard, 111 †
Ziegler Polar Expedition, 1903–1905; Scientific Results, 80 §
Arçtowski, H., Influence de la lune sur la vitesse du vent aux sommets du Saentis, etc., 112 †; Variation des amplitudes des marches diurnes de la température au sommet du Pike's Peak, 112 †; Variations de longue durée de divers phénomènes atmosphériques, 112 †
Argentine—
Exploraciones arquéologicas en la cuidad prehistorica de "La Paya": J. B. Ambrosetti, 438 †
Arizona—
Antiquities of upper Gila and Salt river valleys in Arizona and New Mexico: W. Hough, 542 †
Excavations at Casa Grande in 1906–07: J. W. Fewkes, 108 †
Meteor crater of canyon Diablo, Arizona: G. P. Merrill, 542 †
Arldt, T., Entwicklung der Kontinente und ihrer Lebewelt, 173 §; Geographische Lage der Abyssischen Gräben, 322 †
Armbruster, C. H., Initia Amharica; an introduction to spoken Amharic, 318 †
Arnaud, E., and M. Cortier, La Mission Arnaud-Cortier de l'une à l'autre rive du Sahara, 108 †; Nos confins Sahariens, 318 †
Arnot, F. S., Pen and picture account of visit to Central Africa, 203 †
Aro tribe, Southern Nigeria, 7
Arolla—
Guide to walks and climbs around Arolla: W. Larden, 635 †
Arrhenius, S., Worlds in the Making, 208 †, 526 §
Artesian flows, Summary of controlling factors of: M. L. Fuller, 441 †
Artificial horizon, New reflecting: E. A. Reeves, 610

Aru islands—
Viertal tochten door het eiland Tĕrangan (Aroe-Eilanden) in 1907: J. W. Tissot van Patot, 110 †
Aryan Race of Europe, 405
Ashe, W. W.: *see* Parker, H. N.
Asia—
Anglo-Russian convention: H. F. B. Lynch, 637 †
Central: Kozlof's Central Asian Expedition of 1899–1901..519 §; Notre Mission in Asie Centrale: P. Pelliot, 637 †; Reiseskizzen aus Centralasien: G. Prinz, 106 †
Expeditions: Dr. Brunhuber's, 529; Captain D'Ollone's, 529; Sven Hedin's, 3, 306, 426; P. K. Kozloff's, 529; M. A. Stein's, 3, 347, 598
Expedition to Jair, Semista, and Urkashar: V. A. Obrucheff, 106 †
Etrême Orient dans la littérature et la cartographie de l'Occident des XIII^e^, XIV^e^, et XV^e^ siècles: I. Hallberg, 200 †
Maps: Asia a base fisica: G. Cora, 546 †
Pag Sam Jon Zang: Sumpa Khan-po, 435 †
Pekin to Sikkim, From: Count de Lesdain, 295 §
Problems in Exploration: I. Western Asia: D. G. Hogarth, 549 *
Regional Geography; Asia: J. B. Reynolds, 637 †
Sand-dunes in a lake of Central Asia, An archipelago of: E. Huntington, 106 †
Travels across Asia, Count de Lesdain's: C. E. D. Black, 106 †
Travels and journals preserved in the Bombay Secretariat, Selections from: G. W. Forrest, 316 †, 516 §
Asia Minor—
Höhenmessungen von A. Philippson im Südwestlichen Kleinasien im 1904, Ergebnisse der: O. Kiewel, 540 †
Milesischen Halbinsel, Karte der, mit erläuterndem Text: T. Wiegand, 202 †
Unexplored parts of, 559–561
Asiatic Travels—
Letter from G. W. Forrest on, 632
Asimont, W. F. C., Hevea Brasiliensis or Para rubber, in Malay Peninsula, 540 †
Asp, O., Expedición al Pilcomayo, 1903.. 640 †
Astronomical Compass and Time Indicator: E. A. Reeves, 608
Astrophysical Observatory of Smithsonian Institution, Annals of: C. G. Abbott and F. E. Fowle, 441 †
Aswan Cataract of Nile: J. Ball, 165 §
Athabasca river—
Sources of the Saskatchewan and Athabasca rivers, Among the: M. T. S. Schäffer, 205 †
Atiri rapids, Nile river, 469
Atlante Manoscritto di Battista Agnese della Biblioteca Reale di Torino: A. Magnaghi, 443 †
Atlantic—
Dänischen hydrographischen Untersuchungen im Nordatlantischen Ozean: W. Brennecke, 113 †
Hydrography of north-east part of Atlantic, Contribution to: J. N. Nielsen, 113 †
Maps: Monthly Meteorological Charts of North Atlantic and Mediterranean (Meteorological Office, London), 120 †, 215 †, 327 †, 448 †, 548 †, 648 †; Pilot Charts of North Atlantic Ocean (U.S. Hydrographic Office), 120 †, 327 †, 448 †, 548 †
Salzgehalt und Dichte der Meeresoberflache in den westindischen Gewässern: G. Schott, 113 †
Atlas mountains—
Itinéraires dans le Haut Atlas marocain: L. Gentil, 541 †
Atlases—
Année Cartographique: F. Schrader, 647 †
Atlas Antiquus: E. Reich, 119 †
Atlas Clásico de Geografia Moderna: F. Schrader y L. Gallouédec, 326 †
Atlas Universel de Geographie: V. de St. Martin et F. Schrader, 326 †
Chinese Empire (China Inland Mission), 546 †
Royal Atlas of Modern Geography: W. & A. K. Johnston, 326 †
Atwood, W. W., Lakes of the Uinta Mountains, 109 †
Auckland Islands, Southern Ocean, L. Cockayne's expedition to, 311
Auerbach, B., Moselle, Sarre, Chiers, 635 †
Auler Pasha, Die Hedschasbahn, 305 §, 540 †; Hedschas-Bahn zwischen den Stationen Ma'ân und El'Ula (Map), 214 †
Australasia—
Maps: Stanford's new orographical map of Australasia: H. J. Mackinder, 118 †
Australia—
Artesian water-supply of Australia, Problems of: E. F. Pittman, 438 †
Australia (Romance of Empire Series): W. H. Lang, 177 §, 207 †
Great Barrier Reef, C. Hedley and J. G. Taylor's observations on, 533
Irrigation in Australia, Possibilities and prospects of: T. A. Coghlan, 439 †
South: State Aid for Geography, 188
Stanford's Compendium of Geography and Travel. Australia and New Zealand: J. W. Gregory, 78 §
Western: Seventh Census, 1901..110 †
Austria—
Maps: Karte der Brentagruppe (D. u. O. Verein), 545 †; Karte der Langkofel- und Sellagruppe, etc., 643 †; Touristen-Wanderkarten: G. Freytag, 643 †
Niederschlagsverhältnisse im Mur-,

Austria—*continued.*
Drau- und Savegebiete: P. Deutsch, 102†
Römerstrassen, Geographische Element bei den: O. Jauker, 82§, 197†
Ayasse, —, Explorations North of Lake Chad, 85
Aylmer, L., Journey in Country south of Tana River, East Africa, 55*
Aylmer lake, British North America, 275
Aymard, A., Les Touareg du sud, 319†
Azores—
Volcanoes of Azores: W. H. Pickering, 635†

B.

Baamba tribe, Central Africa, 490
Bach, H., Klima von Davos, 315†
Backlund, H., Travaux et résultats de l'expédition de la Khatanga (1905), 318†
Bacot, J., Explorations on Chino-Tibetan frontier, 181; Journey in South-Eastern Tibet, 182
Baedeker, K., Handbooks for travellers: Berlin and environs, 314†; London and environs, 315†
Bafia tribe and country, Kamerun, 308
Bagdad—
Chemin de fer de Konia-Bagdad: F. Vanier, 202†
Railway, new section from Bugurlu to Helif, 305
Bahau tribe, Borneo, 518
Bahr-el-Ghazal—
Marshes of, 457; rainfall, 458
Bahr-el-Jebel—
Marshes of, 457; rainfall, 458
Bailey, S. I., Peruvian meteorology; Observations made at Arequipa station, 1892–1895..206†
Bailward, A. C., Photographs of Persia, 216†
Baker, E. G.: *see* Rendle, A. B.
Bakhuis, L. A., De 5de wetenschappelijke expeditie naar het binnenland van Suriname, 206†
Baki tribe, Kamerun, 308
Baldwin, D. H.: *see* Gannett, S. S.
Bali—
Eerste bestijging van den heiligen Vulkaan Batoer op Bali: W. O. J. Nieuwenkamp, 202†
Balkans Peninsula—
Balkan Geography and Balkan Railways: N. Buxton, 217*
Railway projects in Balkan Peninsula: R. Richardson, 197†
Washed by four seas: H. C. Woods, 537†, 617§
Ball, J., First or Aswan Cataract of Nile, 165§
Ballester y Castell, R., Investigaciones sobre metodología geográfica, 643†
Baltic—
Kenntnis der Wasserbewegungen..in den Finland umgebenden Meeren: R. Withing, 442†
Strömstudier vid Oestersjöns portar: O. Pettersson, 113†
Tätigkeit der Kommission C. I., Bericht über die, 113†
Bancroft, J. A., Notes on Coast of British Columbia, 186
Banse, E., Nordafrikanische Tripolis und seine Mnschia, 541†; Tripoliner Landschaft, 320†
Baratta, M., Sulle recenti transformazioni del delta del Po, 104†
Barbour, T., Notes on zoological collecting trip to Dutch New Guinea, 641†
Baren, J. van, Physiografische Problemen in den Indischen Archipel, 317†
Barinas, Venezuela, 335
Barnes, H. T., Formation of ground or anchor ice, 441†
Barometer readings—
Comparison of ships' barometer readings with those deduced from land observations: E. Gold, 441†
Barrett, S. A., Ethnography of Pomo and neighbouring Indians, 321†
Barron, T., Topography and geology of Peninsula of Sinai, 203†, 520§
Bartholomew, J., Pedestrian's map of Edinburgh district and Pentland Hills, 117†; Plans of Bournemouth, Eastbourne, Harrogate, and Newcastle, 212†; District Plan of Glasgow, 445†
Bartholomew, J. G., Commercial Map of South America, 646†; and G. A. Piquet, New survey map of Jersey, 323†
Barton, F. R., Journeys in New Guinea, 266*
Bascellos, C. de S., O archipelago de Cabo Verde, 638†
Baschin, O., Bibliotheca geographica, 642†; Verteilung des Luftdrucks über den Ozeanen, 112†
Bashi or Batanes islands, H. G. Ferguson's geological reconnaissance, 429
Bas-Languedoc, Plaine du: M. Sorre, 103†
Bastos, A., Traços geraes sobre a ethnographie do districto de Benguella, 638†
Basutoland—
Geology of Basutoland, Notes on: S. S. Dornan, 106†
Photographs of: C. French, 548†
Bather, F. A., remarks on "Douglas Glacier and its Neighbourhood," 138
Batn-el-Ghrul escarpment, Arabia, 575, 576
Batres, L., Civilización prehistórica de las Riberas del Papaloapam y Costa de Sotavento, 542†; Exploraciones y consolidación de los monumentos arqueológicos de Teotihuacan, 542†; Reparación y consolidación del Edificio de las Columnas en Mitla, 542†

Batwa or Bambutu tribe, Central Africa, 490
Bauer, L. A., Department of terrestrial magnetism of Carnegie Institution of Washington. Annual Report, 209†; Some results of magnetic survey of United States, 188 §, 542†
Bavaria—
Apianischen Karte von Bayern, Zur Technik der: M. Gasser, 103†
Bayerns in historischer Zeit ausgerrottete und ausgestorbene Tiere: J. Reindl, 103†
Bruck an der Amper: J. Jaeger, 198†
Seestudien in Bayern, Neue: G. Breu 103†
Tatigkeit des bayer. Topographischen Bureaus in den letzten 10 Jahren: — Heller, 198†
Beaches—
Changes of level and production of raised beaches: T. F. Jamieson, 209†
Beadle, C., Some observations upon underground water supplies to Thames basin, 539†
Beadnell, H. J. L., Flowing wells and sub-surface water in Kharga Oasis, 107†; remarks on "Problems in Exploration," 568
Beccari, C., Rerum Æthiopicarum Scriptores Occidentales inediti a Sæculo xvi. ad xix., 436†
Beccari, N., Escursione nell'alto bacino del Barca e gita a Filfit, 107†
Beckett, H. W., Notes on underground water of Egypt, 107†
Bel, J.-M., Étude géologique et minière du bassin du Niari, 437†
Belam, H., Chart of Liverpool bay, 215†
Belgian Survey between Congo and Albert Nyanza, 493
Belgium—
Étude spéléologique des environs de Goyet et de Hotton (Belgique): E. Rahir, 197†
Belhaven, Lord, remarks on seconding Vote of Thanks to Sir G. Goldie, 99
Bell, J. M., Douglas Glacier and its Neighbourhood, 121*
Bellemo, V., Cosmografia e le scoperte geografiche nel secolo xvi. e i viaggi di Nicolo de Conti, 443†
Bende natives, Southern Nigeria, 15
Bengal—
Santals of Bengal: J. A. Macphail, 202†
Benguella—
Ethnographia do districto de Benguella, Traços geraes sobre a: A. Bastos, 638†
Ben Lomond range, Tasmania, Colonel Legge's exploration of, 624
Bennet, F. J., Solution-subsidence Valleys and Swallow-holes within the Hythe Beds area of West Malling and Maidstone, 277*; White Horse Stone and its legend, 539†
Bennett island—
Last expedition to Bennett Island, sent . . . in search of Baron Toll: A. Kolchak, 111†
Berget, A., Utilisation des failles pour la détermination de la densité moyenne de la terre, 441†
Berlin—
Handbook for travellers: K. Baedeker, 314†
Berlin Geographical Society—
Award to Captain Scott, 191
Fest-Sitzung zur Feier des 80-jährigen Bestehens der Gesellschaft für Erdkunde zu Berlin am Mai 1908..443†
Bermudas—
Bermuda in periodical literature: G. W. Cole, 320†
Magnetic declination and latitude observations in Bermudas: J. F. Cole, 639†
Bernacchi, L. C., Journey into region of Rio Inambari in Peru, 511
Bernard, A., Frontière algero-marocaine, 541†; Recensement de 1906 en Algérie et en Tunisie, 106†
Bernese Oberland: H. Dübi, 314†
Berry, Jolivet's Map of: A. Vacher, 528
Berthier, H., Grands lacs de Madagascar, 541†
Bézin, Glacier de, en Maurienne: P. Girardin, 103†, 179 §
Bhot Kol glacier, Nun Kun mountains, letter from A. Neve on, 631
Bibliotheca geographica: O. Baschin, 642†
Bieber, F. J., Dizionario della lingua cafficio, 202†; Kaffa: Routen der Expeditionen des Freiherrn A. v. Mylius, 214†; Staatliche Leben des Kaffitscho, 436†
Bigelow, F. H., Relations between meteorological elements of United States and solar radiation, 542†; Studies on phenomena of evaporation of water over lakes and reservoirs, 322†; Studies on rate of evaporation at Reno, Nevada, and in Salton Sink, 108†
Bingham, H., On route of Bolivar's Great March, 329*
Bipolarity, Problem of, 45
Birchy pond, Newfoundland, 161
Bird Migration, experiments by the "Vogelwarte," 627
Birge, E. A., Respiration of an inland lake, 190 §, 322†
Bishop, A. L., State works of Pennsylvania, 640†
Bismarck archipelago—
Expedition under Prof. Thilenius, 91
German Ethnological Expedition to, 534
People of, 78
Bjørnbo, A., and C. S. Petersen, Anecdota Cartographica Septentrionalia, 324†
Black, C. E. D., Count de Lesdain's travels across Asia, 106†

Blanc, E., Expédition arctique russe de 1905..641 †
Blessich, A., Frontière tra l'Abissinia e la Somalia e Dancalia italiane, 540 †
Blondel, G., Free Ports, 368
Boeddicker, O., Black rain in Ireland, Oct. 8 to 9, 1907..200 †
Bogoslov Volcano, Evolution of the: T. A. Jaggar, 621
Bohemia—
Massif de la Bohême, Nouvelles observations géomorphologiques sur le: F. Machaček, 102 †
Bolivar's Great March, On Route of: H. Bingham, 329 *
Bolivia—
Bolivia: M. R. Wright, 438 †
Dans l'Orient bolivien; notes sur les provinces de Chiquitos et de Velasco: J. B. Vaudry, 109 †
Expedition to Peru and Bolivia, W. C. Farabee's, 533
Bolster, R. H.: *see* Parker, H. N.
Bombay Secretariat, Selections from travels and journals preserved in the: G. W. Forrest, 316 †, 516 §
Bonne bay, Newfoundland, 158
Bonney, T. G., On evidence for desert conditions in the British Trias, 636 †
Bons d'Anty, P., Missions de, 184 §, 201 †
Borneo—
Photographs of British North Borneo: H. M. Lomas, 215 †
Quer durch Borneo: A. W. Nieuwenhuis, 517 §
Bosnia and Hercegovina—
Maps: Generalkarte von Bosnien und der Hercegowina nebst Dalmatien: K. Peucker, 323 †
Bougainville, Dr. Sapper's researches in, 624
Bovill, W. B. Forster, Hungary and the Hungarians, 617 §
Boyd, W. H., Special map of Rossland, B.C., 325 †
Boyer, A., and others, Populations forestières du centre de la France, 82 §, 103 †
Brachelli, H. F., and F. von Juraschek, Die Staaten Europas, 314 †
Brackenbury, E. A., Short Vocabulary of Fulani language, 541 †
Brahmaputra, Source of, 587
Brandstetter, R., Malaio-polynesische Forschungen, 317 †
Braun, P., Canalisation de la Moselle, 103 †
Brazil—
Anthropologische Beobachtungen aus Zentralbrasilien: E. Ranke, 110 †
Botokuden in Südbrasilien: G. von Koenigswald, 110 †
Brasilien und die deutsch-brasilianische Kolonie Blumenau: D. Wettstein, 438 †
Innere von Nordost-Brasilien: E. Ule, 438 †
Brazil—*continued.*
Landeskunde der Republik Brasilien: R. von Ihering, 543 †
Maps: Mappa da Republica dos Estados-Unidos do Brazil: E. Levasseur, 646 †; Republica dos Estados Unidos do Brazil: O. Freire, 325 †
United States of Brazil, 109 †
Brecht, R., Salz- und Bittersee-gebiet zwischen Irtysch und Ob, 202 †
Brennecke, W., Dänischen hydrographischen Untersuchungen im Nordatlantischen Ozean, 113 †; Ozeanographische Arbeiten S.M.S. *Planet*, 209 †; Stündliche Änderungen der hydrographischen und biologischen Verhältnisse auf der Reede von Ostende, 209 †
Brenner, F., Address to Ninth International Geographical Congress, 364
Breu, G., Neue Seestudien in Bayern, 103 †; Tegernsee, eine limnologische Studie, 103 †
Briet, L., Bassin supérieur du Rio Vero (Haut-Aragon, Espagne), 199 †
Brigham, A. P., Distribution of Population in United States, 380 *
Bright, R. G. T., Uganda-Congo Boundary Commission, 488 *
Brion, H. de, A India Portugueza, 637 †
Briquet, A., Pénéplaine du nord de la France, 435 †
British Association—
Dublin Meeting, 1908: Geographical Section, Presidential Address, 390; Geography at the, 508; Mathematical and Physical Science Section, Presidential Address, 209 †
British Colonies—
Historical Geography of British Colonies. Vol. 5, Canada: H. E. Egerton, 542 †, 618 §
British Columbia—
Alluvial Fan, near Field, in British Columbia: F. H. Lahee, 639 †
Coast of, J. A. Bancroft's Notes, 186
Maps: Special map of Rossland, B.C.: W. H. Boyd, 325 †
British Empire—
Cotton Cultivation: W. Dunstan, 211 †
Mines and Minerals of British Empire: R. S. G. Stokes, 177 §, 211 †
Outposts of Empire: J. Lang, 544 †
Survey of the: E. H. Hills, 390
British Isles: *see* United Kingdom
British Museum—
Catalogue of maps, etc., 211 †
British Trias, On evidence for desert conditions in the: T. G. Bonney, 636 †
Brocken—
Beobachtungen des kunstlichen Brockengespenstes: F. Richarz, 113 †
Broomhall, M., Present-day Conditions in China, 176 §, 200 †
Brotherus, V. F., on mosses of the Antarctic, 33
Brown, R. M., An experiment on size of the Earth, 115 †

Brown, R. N. R., Appointment to Lectureship in Geography at Sheffield, 92
Bruce, W. S., Exploration of Prince Charles Foreland, 1906–07..139 *; remarks on Scientific Results of *Scotia* Antarctic Expedition, 510
Bruck an der Amper: J. Jaeger, 198 †
Brückner, E., Schneeschmelzkegel in den Alpen und Nieve Penitente, 312 §, 322 †
Brun, A., Quelques recherches sur le Volcanisme, 114 †, 540 †
Brunhes, B., Contre-alizé, 112 †
Brunhes, J., on mode of glacial erosion, 367
Brunhuber, —, Exploration of the Salwin, 529
Bryan, W. A., Pacific Scientific Institution, An Address, 207 †
Buchanan, J. Y., remarks on "Exploration of Prince Charles Foreland," 150
Buenos Aires—
  Maps: Buenos Aires Great Southern Ry. and Connections, 1908..645 †
Bulgar Dagh, 560
Burgess, H. F. J., remarks on "Some Geographical Aspects of the Nile," 479
Burma—
  Taungtha Hills, Structure and Age of: G. de P. Cotter, 637 †
  Tilin-daik-Thein, letter from J. R. H. on, 433
Burrard, S. G., and H. H. Hayden, Sketch of geography and geology of Himalaya Mountains and Tibet, 316 †, 416 §
Bury, Mr., remarks on "Problems in Exploration," 566
Busck, A., Report on . . . Mosquito Fauna of Panama, 639 †
Bushell, S. W., obituary, 630
Bushmen—
  Buschmänner der Kalahari: S. Passarge, 167 §
Busse, W., Periodischen Grasbrände im tropischen Afrika, 429 §, 436 †
Butler, Sir W., Sir A. E. Turner, and Sir C. Campbell. Channel Tunnel, Papers on national defence, 102 †
Buttgenbach, H., Congo deviendra-t-il un pays minier? 107 †
Buxton, N., Balkan Geography and Balkan Railways, 217 *
Buxtorf, A., and others, Geologische Beschreibung des Weissensteintunnels und seiner Umgebung, 538 †
Byng-Hall, F. F. W., English-Okpoto vocabulary, 541 †

C.

Calcutta—
  Earthquakes of 1906: C. S. Middlemiss, 637 †
California—
  Ethnogeography of Pomo and neighbouring Indians: S. A. Barrett, 321 †
  Spirit-levelling in California, Results of, 1896–1907: S. S. Gannett and D. H. Baldwin, 542 †
California—*continued*.
  Triangulazione in California dopo il terremoto del Aprile 1906, I resultati della revisione della: G. Costanzi, 542 †
Calvert, A. T., Valladolid, Oviedo, etc., 538 †
Cambier, E., Réseau ferré de la Turquie d'Asie, 318 †
Cambridge—
  Geography, Lectureships in, 92
Campbell, Sir C.: *see* Butler, Sir W.
Campers' Handbook: T. H. Holding, 303 §
Campos, E. de, S. Thomé, 638 †
Camsell, C., Report on Peel river and tributaries, 437 †
Canada—
  Astronomer, Chief, Report for 1906.. 639 †
  Boundary between Canada and United States, New demarcation, 309
  Canoe trip to plains of the Caribou: E. T. Seton, 275 *
  Farm cottage, camp, and canoe in maritime Canada: A. P. Silver, 177 §, 205 †
  Geographic Board of Canada, Decisions, 1907–1908..205 †
  Geographie und Geologie Canadas und des arktischen Archipels von Nordamerika: H. Haas, 639 †
  Geological Survey, General Index to Reports, 1885–1906..639 †; Summary Report for 1906..639 †
  Glaciers of Canadian Rockies and Selkirks: W. H. Sherzer, 108 †
  Historical Geography of British Colonies. Vol. 5, Canada: H. E. Egerton, 542 †, 618 §
  Land of the Maple Leaf: B. Stewart, 177 §
  Maps: Canada (Top. Section, General Staff), 446 †, 646 †; Dominion of Canada (Dept. of Interior), 446 †, 547 †; Railway map of Dominion of Canada (Dept. of Interior, Ottawa), 118 †; Sectional map of Canada (Dept. of Interior), 446 †, 547 †; Standard Topographical map of Canada (Dept. of Interior, Ottawa), 118 † 325 †, 547 †; Topographic map of Canada (Dept. of Militia and Defence), 215 †
  Northland, Canada's fertile: E. J. Chambers, 542 †
  Northward Expansion of Canada: W. L. Grant, 510
  North-West Provinces of Canada, Settlement and agriculture development of: E. H. Godfrey, 437 †
Canals—
  Royal Commission on Canals and Waterways, Returns, 539 †
Canary islands—
  Volcanisme au Pico de Teyde et au Timanfaya, Quelques recherches sur: A. Brun, 540 †

Canerio, N. de, Marine Chart of World, 1502, edited: E. L. Stevenson, 647 †
Canoe Indians, Patagonia, 592
Canto, J. P., Economical and social progress of Republic of Chile, 206 †
Cão, Diogo, Inscription at Mouth of Congo, 185
Cape Colony—
Maps: Geological map of Colony of Cape of Good Hope (Cape Geological Commission), 117 †
Trout-fishing in Cape Colony: D. W. Manning, 436 †
Cape Verde islands—
Archipelago de Cabo Verde: C. de S. Bascellos, 638 †
Carabobo battlefield, Venezuela, 330
Caracas to Bogotá *viâ* Arauca and the Paramo of Pisva: H. Bingham, 329 *
Cardoso, J. P., Commissão geographica e geologica do Estado de S. Paulo, 110 †
Caribou, Canoe trip to plains of the: E. T. Seton, 275 *
Carlos de Bragança, D., Catalogo illustrado das aves de Portugal, 199 †
Carney, F., A possible overflow channel of ponded waters antedating recession of Wisconsin ice, 321 †; Springs as a geographic influence in humid climates, 442 †
Caroline islands—
Maps: Karte von Babeldáob und Politische Uebersichtskarte der Yap-Inseln: A. Krämer, 447 †
Carpathians—
Recherches sur l'évolution morphologique des Alpes de Transylvania: E. de Martonne, 104 †, 424 §
Carpenter, G. H., on Collembola of the Antarctic, 40
Carter, O. C. S., Nevada, the Silver State, and Government in Nevada, 109 †
Cartography (*see also* Maps)—
Échelles métriques des cartes géographiques, etc.: P. Pollacchi, 111 †
International Cartographic Association, Formation of, 374
Kartenentwurfslehre für Studierende der Erdkunde und deren Lehrer: K. Zöppritz, 208 †
Lecture des cartes anglaises et des États-Unis: P. Pollacchi, 440 †
Origines de la cartographie portugaise et les cartes des Reinel: J. Denucé, 443 †
Cartwright, H. A.: *see* Wright, A.
Casanare, Colombia, 342
Case, G. O.: *see* Owens, J. S.
Castelcin, A., Congo State, its origin, rights, and duties, 303 §
Castelnau, P., Physiography of the Niolo river, Corsica, 179
Castro, L. de, Eine Reise zum Berg Zuquala, etc., 638 †
Cattaro, Gulf of, Balkan peninsula, 221
Caucasus—
Rejser i Terekdistriktet og Nordkaukasus, Indtryk fra mine; O. Olufsen, 105 †
Cave, H. W., Book of Ceylon, 418 §
Celebes—
Anthropologie der Insel Celebes, Versuch einer: P. und F. Sarasin, 202 †
Ceram—
Eiland Seran en zijne Bewoners: F. J. P. Sachse, 519 §
Ceylon—
Book of Ceylon: H. W. Cave, 418 §
Ceylon, the Paradise of Adam: C. Corner, 81 §
Coast Features of Ceylon: B. T. Somerville, 427
Discovery of Ceylon by Portuguese in 1506: D. Ferguson, 435 †
Handbook for Resident and Traveller: J. C. Willis, 418 §
Submerged plateau surrounding Ceylon: B. T. Somerville, 427 §, 436 †
Veddas of Ceylon: C. G. Seligmann, 512
Chaco—
Exploración al Chaco, Informe sobre: J. McLean, 640 †
Chad, Lake—
Etude sur le Tchad et le bassin du Chari: H. Freydenberg, 319 †
Exploration North of Chad by Lieut. Ayasse, 85
Chaktak-tsampo, Tibet, 589
Chambers, E. J., Canada's fertile Northland, 542 †
Champagne—
Cartes anciennes de la Champagne: E. Chantriot, 103 †
Changming tribe, Se-chuan, 595
Channel Tunnel. Papers on national defence: Sir W. Butler, Sir A. E. Turner, Sir C. Campbell, 102 †
Chantriot, E., Cartes anciennes de la Champagne, 103 †
Chapman, J. M., Corsica; an island of rest, 538 †
Chapman, R. T., A drowned empire, 321 †
Charcot, J., Expeditions to Antarctic Regions, 3, 189, 311; and others, Expédition Antarctique Française Sciences naturelles; Documents scientifiques, 543 †
Charlton, L., A Hausa reading-book, 204 †, 302 §
Charts—
Admiralty, † 119, 326, 447, 547, 648
Carta nautica sconosciuta di Vincenzo di Demetrio Volcio: A. Mori, 642 †
Chilian Hydrographic Charts. (Oficina Hidrografica), 448 †
Danish Hydrographic, 215 †
Liverpool Bay: H. Belam, 215 †
Meteorological Charts of Indian Ocean and Red Sea (Met. Office, London), † 120, 215, 327, 448, 548, 648; North Atlantic and Mediterranean (Met. Office, London), † 120, 215, 327, 448, 548, 648

Charts—*continued.*
Norway: Kystkarter (Norges Geografiske Opmaaling), 120†, 648
Pilot Charts of North Atlantic (U.S. Hydrog. Office), †120, 327, 448, 548; North Pacific (U.S. Hydrog. Office), †120, 215, 327, 448, 548, 648†
Position Line Chart, on Mercator's Projection, for all Latitudes, Edmond's, 120
Chavannes, E., Voyage archéologique dans la Mandchourie et la Chine septentrionale, 201†
Cheng-ka, Yunnan, 244
Chevalier, A., Afrique Centrale Française, 73§; Forêt vierge de la Côte d'Ivoire, 540†
Chichilticalli: S. O. Potter, 639†
Chih-li—
Maps: Karte von Tschili und Schantung (K. Preuss. Landesaufnahme), 324†
Photographs of Chih-li Province: H. R. Davies and A. H. Hilton-Johnson, 327†
Chihuahua—
Mines of: J. Griggs, 205†
Childers, S., A mariner of England; account of career of William Richardson, 544†
Chile—
Economical and social progress of Republic of Chile: J. P. Canto, 206†
Estadistica Minera de Chile en 1904 i 1905: G. Yunge, 640†
Maps: Comision Chilena de Limites (Oficina de Limites), 215†; Hydrographic Charts, 448†
Vegetation der Erde. VIII. Grundzüge der Pflanzenverbreitung in Chile: K. Reiche, 297§
Chiltern Valleys: E. C. Spicer, 288*
China—
Ambassador to China, Our First: H. H. Robbins, 176§
Bibliotheca Sinica: H. Cordier, 637†
Explorations on Chino-Tibetan frontier: J. Bacot, 181
Missions Pierre Bons d'Anty, 184§, 201†
Peking to Mandalay, From: R. F. Johnston, 164§, 201†
Photographs of: H. Kirkhope, 328†
Present-day conditions in China: M. Broomhall, 176§, 200†
Treaties, etc., between Great Britain and China and Foreign Powers: G. P. Hertslet, 316†
Western, Journey by T. Smith and J. H. Edgar, 619
Chinese Empire—
Atlas of the (China Inland Mission), 546†
Comprehensive Geography of Chinese Empire and Dependencies: L. Richard, 201†
From Pekin to Sikkim through the Ordos, Gobi Desert, and Tibet: Count de Lesdain, 201†
Studienreise in Nord-West China und Ost-Tibet, Vorläufiger Bericht über seine: A. Tafel, 436†
Chinese Turkestan: Mission Pelliot, 201†
Chirima river, British New Guinea, 268
Chisholm, G. G., Economic geography, 114†; Ninth International Geographical Congress, 364*; remarks on "Balkan Geography and Balkan Railways," 237
Cholnoky, J. von, Ueber die Lagerveränderungen des Tiszabettes, 104†
Chree, C., Magnetic declination at Kew Observatory, 1890 to 1900..636†
Christ, H., Flore de la Suisse et ses origines, 315†
Chudeau, R., Etudes sur le Sahara et le Soudan, 204†
Church, C. M., and J. L. Myres, Contribution to Topography of North-Western Greece, 47*
Clancey, J. C., Aid to land-surveying, etc., 440†
Clark, C. H., Recent Crinoids and their Relation to Sea and Land, 602*
Clarke, E., on birds obtained by Scottish Antarctic Expedition, 39
Clarke, S. A., Pioneer days of Oregon history, 206†
Clerget, P., Communications transalpestres, 102†; Introduction géographie à l'étude de l'économie politique, 114†; Suisse au XX^e siècle; étude économique et sociale, 199†, 302§
Climatology—
Klimatologische Probleme im Lichte moderner Seenforschung: W. Halbfass, 208†
Landsee und Wald als Klimatische Faktoren: J. Schubert, 112†
Man, Climate considered especially in relation to: R. de C. Ward, 440†
Polar Ice on the Weather, Effect of: E. Du Faur, 112†
Relations between climates and crops, First report on: C. Abbe, 642†
Clinton valley, New Zealand, 360
Clinton-Colden, Lake, British North America, 275
Close, C. F., remarks on "Formation of Valleys in Porous Strata," 293
Clouds—
Schätzung der Bewolkungsgrade: E. Leyst, 112†
Clouzot, E., Anciennes forêts de la France, 635†
Clyde Basin—
Hill Country, A, its physical features and their significance: R. F. Gwinnell, 539†
Coast Erosion—
Foreshore protection, Coast erosion and: J. S. Owens and G. O. Case, 208†
Royal Commission on, 413§

Cockayne, L., and D. Smith, Southern Islands expedition, 310 §, 439 †
Coghlan, T. A., Possibilities and prospects of irrigation in Australia, 439 †
Cole, G. W., Bermuda in periodical literature, 320 †
Cole, J. F., Magnetic declination and latitude observations in Bermudas, 639 †
Collet, L. W., Les dépôts marins, 209 †
Collins, W. H., Report on portion of North-Western Ontario traversed by National Transcontinental Railway, 437 †
Colombia—
Forschungsreise des H. Rice in den Gebieten zwischen Guaviare und Caquetá-Yapurá: T. Koch-Grünberg, 438 †
Indians of, 340
Lands in Republic of Colombia, Denouncement and allotment of, 206 †
Colonial school, German, 628
Colonisation—
Colonization chez les peuples modernes: P. Leroy-Beaulieu, 210 †
Colonsay—
Two Earth Movements of Colonsay: W. B. Wright, 539 †
Colorado river—
Desert basins of Colorado delta: D. T. MacDougal, 109 †
More changes of the: D. T. MacDougal, 109 †
Columbus—
Christopher Columbus and the New World of his Discovery: F. Young, 174 §
Commerce—
Entstehung der wirtschaftlichen Arbeit: E. Hahn, 210 †
Weltwirtschaft; ein Jahr- und Lesebuch: E. von Halle, 210 †
Compass—
Questione su Flavio Gioia e la bussola al lume di nuovi documenti e di nuove allegazioni: F. Porena, 208 †
Comyn, D., letter from, on Westernmost Feeders of Nile, 95
Conder, C. R., Rise of Man, 210 †
Congo, French: Boundary between Kamerun and French Congo, 87; Observations sur la géologie des pays entre l'Oubangui et le Chari: L. Gentil et P. Lemoine, 638 †; Reconnaissance d'un tracé de voie ferrée de Brazzaville à l'Océan: Captain Mornet, 437 †; Voyage au Congo français: H. Trilles, 107 †
Congo river—
Cão, Diogo, Inscription at Mouth of Congo, 185
Levelling between Nile and Congo basins, 493 *
Congo State—
Boundary Commission, Uganda-Congo: R. G. T. Bright, 488 *
Congo State—*continued*.
Congo deviendra-t-il un pays minier? H. Buttgenbach, 107 †
Faune du Congo, Contributions à la: J. Fraipont, 107 †
Géographie, physique, politique, et économique: F. Goffart, 318 †
Grenfell, George, and the Congo: Sir H. Johnston, 320 †
Origin, rights, and duties: A. Castelein, 303 §
Wasserstrassen und Eisenbahnen im freien Kongo-Staat: A. de Ghellinck, 203 †
Connecticut—
Population, density of, 382
Conti, N. de, La cosmografia e le scoperte geografiche nel secolo xvi. e i viaggi di: V. Bellemo, 443 †
Continents—
Entstehung der Kontinente, der Vulkane und Gebirge: P. O. Köhler, 440 †
Entwicklung der Kontinente und ihrer Lebewelt: T. Arldt, 173 §
Conway, Sir M., remarks on "Exploration of Prince Charles Foreland," 149; Workman's "Ice-bound Heights of the Mustagh," 71 §
Cook, Capt., a London Monument to, 628
Cook, F. A., Expedition in Arctic America, 535; To the Top of the Continent, 614 §
Coolidge, W. A. B., Alps in Nature and History, 314 †, 414 §
Copland valley, New Zealand, 132
Cora, G., Asia a base fisica (map), 546 †
Cordier, H., Bibliotheca Sinica, 637 †; Les Lolos, 106 †
Corner, C., Ceylon, the Paradise of Adam, 81 §
Cornwall—
Land's End: a naturalist's impressions in West Cornwall: W. H. Hudson, 315 †
Corsica—
Corsica, an island of rest: J. M. Chapman, 538 †
Niolo River, Physiography of: P. Castelnau, 179
Cortes, F., Letters of: F. A. MacNutt, 320 †
Cortier, M. A. (*see also* Arnaud, E.), L'Adrar des Ifor'ass, 319 †; Expedition in French Sahara, 531
Cosmography—
Cosmographiæ Introductio des Martin Waldseemüller, in Faksimiledruck: F. R. v. Wieser, 444 †
Costa, J. C. da, A riqueza petrolifera d'Angola, 638 †
Costanzi, G., Contributo alla interpretazione elastica dei fenomeni sismici e bradisismici, 322 †; I risultati della revisione della triangulazione in California dopo il terremoto del April 1906..542 †

Cotter, G. de P., Structure and age of Taungtha Hills, Upper Burma, 637 †
Cotton—
British Cotton Cultivation: W. Dunstan, 211 †
British Cotton Growing Association, Annual Report, 443 †; Conference, 1908..640 †
Cotton, E. P., remarks on "Exploration in Southern Nigeria," 24
Couvreur, A. J. L., Een dienstreis benoorden Larantoeka (Oost-Flores), 540 †
Covert, C. C.: *see* Henshaw, F. F.
Craig, J. I., Notes on an expedition to Addis Abbaba, 106 †
Craig, W., North Dakota life, 640 †
Crammer, H., Zur Entstehung der Blätterstruktur der Gletscher aus der Firnschichtung, 321 †
Crawshay, R., Birds of Tierra del Fuego, 171 §
Credner, R., obituary, 631
Cresson, W. P., Persia: the awakening East, 317 †, 423 §
Crinoids, Recent, and their Relation to Sea and Land: A. H. Clark, 602 *
Cross Fell—
Peat-moss deposits in Cross Fell, Caithness, Isle of Man districts, 105 †
Cross river, Nigeria, 13
Crossland, C., Reports on marine biology of Sudanese Red sea, 113 †
Cuba—
Mahogany forests of Cuba, Among the: W. D. Wilcox, 640 †
Cuffe, O. F. L. W., Survey of inaccessible places by tacheometry, 112 †
Cvijić, J., Entwickelungsgeschichte des Eisernen Tores, 102 †
Cyclonic belt, Southern: H. E. Rawson, 178 *
Cyrenaica—
Cirene e Cartagini: G. de Martino, 419 §

D.

Dahlgren, E. W., Voyages françaises à destination de la Mer du Sud avant Bougainville (1695–1749), 110 †, 430 §
Dahome—
"Barre" au Dahomey: H. Hubert, 185 §, 320 †
Maps: Carte du Dahomey: A. Meunier, 645 †
Mission scientifique au Dahomey: H. Hubert, 436 †
Dainelli, G., In Africa (Lettere dall' Eritrea), 203 †, 523 §; ed O. Marinelli, A proposito di moderne manifestazioni di attività vulcanica in Dancalia, 638 †
Dakota—
North Dakota life: W. Craig, 640 †
Dal cataract, Nile, 464
Dalemont, J., Énergie des cours d'eau en Suisse, 105 †
Dallas, W. L., Meteorological Atlas of Indian Seas and North Indian Ocean, 300 §
Dalla Vedova, G., Sull' oggetto e sugli uffici della Sezione VI. dell Associazione italiana por il progresso delle scienze, 643 †
Daly, R. A., Mechanics of Igneous Intrusion, 641 †
Dampier, W., Memorial at East Coker to, 92
Dancalia—
Vulcanica in Dancalia, A proposito di moderne manifestazioni di attività: G. Dainelli ed O. Marinelli, 638 †
Dangra-yum-tso, Tibet, 587
Daniels, F. T., Text-book of topographical drawing, 208 †
Dann, E. W., Historical geography on a regional basis. British Isles, 200 †; Ditto. Europe, 544 †
Danube—
Alten Terrassen des Donaugebietes, Neue Forschungen in den: F. X. Schaffer, 198 †
Donauversickerung bei Immendingen: P. Verbeek, 435 †
Rheinische Donau: K. Endriss, 102 †
Dapper en Montanus: J. F. Niermeyer, 114 †
Darley, H. A. C., Journeys in North-East of Uganda Protectorate, 86
Darton, N. H., Highest Points in States in United States, 640 †
Darwin, Sir G., remarks on "Some Geographical Aspects of the Nile," 475
Darwin, L., remarks on: "Douglas Glacier and its Neighbourhood," 135; "Journey on Upper Salwin," 265; presenting Medal to Prince of Monaco, 196; "Problems in Exploration," 563, 569; "Some Geographical Aspects of the Nile," 475; "Survey of the British Empire," 508; "Taking chair as President of R.G.S.," 101
David, T. W. E., Geology of Hunter River Coal-measures, 110 †
Davidson, G., Discovery of San Francisco Bay, 109 †; Francis Drake on northwest coast of America in 1579..443 †
Davies, H. R., and A. H. Hilton-Johnson, Photographs of Chih-li Province, 327 †
Davis, W. M., Physiographic Subdivisions of Appalachian Mountain System, 508; Practical exercises in physical geography, 544 †
Davison, C., Investigation of earthquakes, 442 †; On some minor British earthquakes of 1904–1907..539 †
Davos—
Klima von Davos: H. Bach, 315 †
Deecke, W., Geologie von Pommern, 163 §
Delafosse, M., Frontières de la côte d'Ivoire de la côte d'Or et du Soudan, 296 §

Della Seta, A., Appunti di topografia omerica, 210 †
Delmé-Radcliffe, C., Award to, 96
Demolins, E.: *see* Boyer, A.
Deniker, J., Les races de l'Europe. II. La taille en Europe, 434 †
Denmark—
Maps: Kort udgivet af det Kongelige Sokort-Arkiv, 215 †
Denucé, J., Iles Lequios (Formose et Riu-kiu) et Ophir, 202 †; Liste inédite de sondages d'eau de mer profonde du Capitaine Hegemann, 113 †, 440 †; Origines de la cartographie portugaise et les cartes des Reinel, 443 †
Deposits—
Influence du vent dans le remplissage du lit de l'Océan: J. Thoulet, 642 †
Derbyshire—
Geology of southern part of Derbyshire and Nottinghamshire Coalfield: W. Gibson and others, 315 †
Dersimli race, Kurdistan, 558
Descamps, P.: *see* Boyer, A.
Deutsch, P., Niederschlagsverhältnisse im Mur-, Drau- und Savegebiete, 102 †
Dickinson, B. B.: *see* Andrews, A. W.
Dieppe—
Aventures des Marins Dieppois: A. Moulin, 115 †
Diguet, E., Montagnards au Tonkin, 317 †
Dinaric Alps, Through the: D. W. Freshfield, 635 †
Dinaux, Captain, Une mission dans l'Adrar du Niger, 638 †
Dines, W. H., Registering balloon ascents in England of July 22 to 27, 1907..200 †
Dingelstedt, V., Republic and Canton of Geneva, 538 §
Discovery—
Entdeckung eines Verstorbenen zur Geschichte der grossen Länderentdeckungen: H. Grauert und O. Hartig, 443 †
Distance-finder Alidade for Plane-table: E. A. Reeves, 607
Dnieper, Precipitation and discharge of, 626
Dniester—
Geschichte des Dniestrtales: E. Romer, 105 †
Dokerla sacred mountain, Tibet, 182
Dominik, H., Vom Atlantik zum Tschadsee, 318 †
Domoko oasis, Central Asia, ruins at, 351
Dornan, S. S., Notes on geology of Basutoland, 106 †
Douglas glacier and its neighbourhood: J. M. Bell, 121 *
Drakensberg—
Drakensberg und der Quathlambabruch: A. Penck, 319 †
Drake's Voyage—
Francis Drake on north-west coast of America in 1579: G. Davidson, 443 †
Drygalski, E. von, Beobachtungen an Gletschern und Inlandeis, 441 †; Deutsche Südpolar-Expedition 1901–1903..207 †, 439 †, 543 †; Neusten Polarreisen und die nordwestliche Durchfahrt, 641 †
Dübi, H., Bernese Oberland. Conway and Coolidge's Climbers' Guides, 314 †
Dublin—
Handbook to City of Dublin and surrounding district, prepared for meeting of British Association, 539 †
Du Faur, E., Effect of polar ice on the weather, 112 †
Dufile to Rejaf, Levelling for proposed railway from, 494
Dunraven, Earl of, Self-instruction in practice and theory of navigation, 208 †
Dunstan, W. R., British Cotton Cultivation, 211 †; Northern Nigeria. Reports on results of Mineral Survey, 204 †; Nyasaland Protectorate. Report on results of mineral survey, 204 †
Duro, C. F., obituary, 192
Dyé, A.-H., Ports du Maroc, 541 †
Dzungaria—
Reise im Djair, Urkaschar und Ssemisstai im Sommer 1906: W. A. Obrutschew, 201 †

E

Earl Grey river, British North America, 275
Earth—
Bemerkungen zu Simroths Pendulationstheorie: O. Maas, 441 †
Coincident activities of Earth and Sun: E. Huntington, 441 †
Dynamical theory of shape of the Earth: A. E. H. Love, 154 §, 209 †
Figure and Constitution of the Earth: A. E. H. Love, 154 §, 209 †
Mars und Erde: E. P. Merian, 442 †
Pendulationstheorie: H. Simroth, 544 †
Plan of the Earth, Recent Literature on: J. W. Gregory, 151 *
Representation of Earth's surface by means of spherical harmonics of first three degrees: A. E. Love, 642 †
Schematische Bodenkarte der Erde: K. D. Glinka, 642 †
Size of the Earth, An experiment on: R. M. Brown, 115 †
Utilisation des failles pour la détermination de la densité moyenne de la terre: A. Berget, 441 †
Earthquakes (*see also* Seismology)—
British Earthquakes of 1904–1907, On some minor: C. Davison, 539 †
Earthquake theories, Some recent: H. V. Gill, 114 †
Edificación contra tremblores: D. Selva, 112 †
Indian Earthquake of 1905, Report on, 209 †
Investigations of earthquakes: Ch. Davison, 442 †
New theory of earthquakes and mountain formation, etc.: T. J. See, 321 †

East Indian Archipelago: *see* Malay Archipelago
East Indies, Comatulids of, 605
East Indies, Dutch—
Luchtvaart ten dienste von het wetenschappelijk onderzoek in Ned.-Indië: A. E. Rambaldo, 201 †
Economics, London School of, Geographical course at, 432
Ecuador—
High Andes of Ecuador, In the: Hans Meyer, 206 †
Edelstein, J. C., Excursion through districts . . . in Shentzin province of Southern Manchuria, 106 †
Edgar, J. H., Marches of the Mantze, 176 §, 201 †
Edinburgh—
Maps: Pedestrian's map of Edinburgh district and Pentland Hills: J. Bartholomew, 117 †
Readership of Geography at Edinburgh University, 2
Edinburgh Isles, Spitsbergen, 144
Edmond's Position Line Chart, on Mercator's Projection, for all Latitudes, 120 †
Edmunds, C. K., A visit to the Hangchow bore, 106 †
Education—
Board of Education Suggestions for consideration of teachers, etc., of Public Elementary Schools, 115 †
Egerton, H. E., Historical geography of British Colonies. Vol. 5, Canada, 542 †, 618 §
Egypt—
Eastern Desert of Egypt, Preliminary Report on Geology of: W. F. Hume, 72 §
Finances . . . of Egypt and Sudan in 1907, Reports, 437 †
Guide to Egypt and Sûdan (Macmillan & Co.), 203 †, 302 §
Irrigation in, 450
Land Measurements and surveys, Ancient, 471, 476
Magnetic Observations in Egypt, 1895–1905: B. F. Keeling, 204 †
Maps: Topographical Map of Egypt (Survey Dept., Cairo), 118 †, 214 †, 325 †, 446 †
Meteorological Report for 1905..107 †
Ports of Egypt, Statistical return of navigation, 1906..203 †
Survey of Egypt: H. G. Lyons, 369
Time, Civil, in Egypt: H. G. Lyons, 107 †
Underground water of Egypt, Notes on: H. W. Beckett, 107 †
White Nile and the cotton crop: Sir W. Willcocks, 107 †
Ekelöf, E., on hygiene of Antarctic Expeditions, 42
Ekman, S., on Cladocera and Copepoda collection of Swedish Antarctic Expedition, 44
El Ampara, Venezuela, 338
Elema people, New Guinea, 273
Elephantine, Island of, Origin of name: A. F. Platt, 437 †
Elephants—
Guide to elephants (recent and fossil) . . . in British Museum (Natural History), 209 †
Eliot, Sir C., on pteropods of the Antarctic, 29
Ellis, T. S., Windings of rivers, 112 †
Ells, R. W., Report on Graham Island, B.C., 437 †
El Ula, Arabia, 583
Emerson, P., and W. C. Moore, Geography through the Stereoscope, 174 §
Endriss, K., Rheinische Donau, 102 †
England and Wales—
Balloon ascents in England of July 22 to 27, 1907, Registering: W. H. Dines, 200 †
Cartography of Counties of England and Wales, Notes on: H. G. Fordham, 510
Maps: Canals and Navigable Rivers (R. Comm. on Canals and Waterways), 117 †; Geological Surveys, † 117, 213, 323, 545, 644; Ordnance Surveys, † 116, 212, 323, 444, 545, 644; Philips' new map of England and Wales, showing Canals, etc.: W. Shawe, 213 †; Plans of Bournemouth, Eastbourne, Harrogate, and Newcastle: J. Bartholomew, 212 †
Enoch, C. R., Peru, its former and present civilization, history, etc., 438 †
En route: R. Trevor, 635 †
Entre Rios—
Exploración arqueológica al delta del Paraná, y sur de Entre Rios: L. M. Torres, 109 †
Environment and Race: W. Ridgeway, 405 *
Epstein, M., Early History of Levant Company, 423 §, 443 †
Erichsen, M., Expedition to East Greenland, 311
Eritrea—
Escursione nell' alto bacino del Barca e gita a Filfit: N. Beccari, 107 †
Lettere dall' Eritrea: G. Dainelli, 203 †, 523 §
Ernst, A., Neue Flora der Vulkaninsel Krakatau, 317 †, 428 §
Erosion—
Coast Erosion and its prevention: W. Pitt, 641 †
Experiments illustrating erosion and sedimentation: T. A. Jaggar, 209 †
Ethnology—
Classificazione razionale dei gruppi umani: G. Sergi, 642 †
Etna—
Éruption de l'Etna, Sur la récente: A. Lacroix, 435 †
Osservazioni meteorologiche eseguite all' Osservatorio su l'Etna dal 1892 al 1906: L. Mendola e F. Eredia, 104 †

Euphrates—
Unexplored parts of valley, 560
Europe—
Communications transalpestres: P. Clerget, 102 †
En Route: R. Trevor, 635 †
Erdkunde in entwickelnder, anschaulicher Darstellung: H. Harms, 538 †
Fynes Moryson's Itinerary, 81 §
Guerre de sept ans; histoire diplomatique et militaire: R. Waddington, 198 †
Guide to Greece, the Archipelago, etc. (Macmillan & Co.), 199 †
Länder- und Staatenkunde von Europa: L. Neumann, 538 †
Maps: Anecdota Cartographica Septentrionalia: A. Bjørnbo et C. Petersen, 324 †; Macmillan's Orographical map of Europe: A. W. Andrews and B. B. Dickinson, 445 †; Uebersichtskarte von Mitteleuropa (K. Preuss. Landesaufnahme), 213 †
Mensch zur Eiszeit in Europa: L. Reinhardt, 198 †
Orographical Map of Europe, Notes on: A. W. Andrews and B. B. Dickinson, 538 †
Races de l'Europe. II. La taille en Europe: J. Deniker, 434 †
Savage Europe, Through: H. de Windt, 315 †, 423 §
Sismicità della Svizzera e quella dell' alta Italia, Di alcune possibili relazione tra la: V. Monti, 102 †
Staaten Europas: H. Brachelli and F. von Juraschek, 314 †
Temperaturanomalien in Mitteleuropa: A. Knörzer, 434 †
Vent d'autan, Note préliminaire sur le: E. de Martonne, 105 †
Evans, Sir John, obituary, 92
Evaporation—
Expedition under R. Lütgens for study of evaporation over the sea, 536
Phenomena of evaporation of water over lakes and reservoirs, Studies on: F. H. Bigelow, 322 †

F.

Fabrics, Fibres for: A. E. Garrett, 642 †
Færoes—
Vegetation and plant-formations: C. H. Ostenfeld, 303
Falkenstein, J.: *see* Güssfeldt, P.
Falkland islands—
Geology of Falkland Islands, Contributions to: J. G. Andersson, 206 †
Farabee, W. C., Expedition to Peru and Bolivia, 533
Faraggiani, A., Alcune notizie sui suk e sui Turcana, 638 †
Faris, R. L., Results of magnetic observations made by Coast and Geodetic Survey, 109 †
Fawcett, P. H., Delimitation of frontiers in South America, 4
Ferguson, D., Discovery of Ceylon by the Portuguese in 1506..435 †
Ferguson, H. G., Contributions to physiography of Philippine Islands, 429 §, 540 †
Fernando Po—
Excursion effectuada en Fernando Póo: E. d'Almonte, 541 †
Fergusson, W. N., Journeys in North-Western Sechuan, 594
Ferrand, G., Les îles Râmny . . . des géographes arabes, 115 †
Fettes glacier, New Zealand, 132
Fewkes, J. W., Excavations at Casa Grande, Arizona, 1906–07..108 †
Ficker, H. v., Zur Meteorologie von West Turkestan, 318 †
Filchner, W., Ueber einige Ergebnisse seiner expedition, 106 †
Fillodeau, —, Journeys in British New Guinea, 270
Filson, J., First map of Kentucky, 646 †
Finistère—
Recherches océanographiques faites dans la région littorale de Concarneau: R. Legendre, 103 †
Finland—
Glaces et des neiges en Finlande pendant l'hiver, 1895–1896, Etat des: A. Heinrichs, 105 †
Summer Tour in Finland: P. Waineman, 617 §, 636 †
Through Finland to St. Petersburg: A. MacC. Scott, 314 †, 422 §
Fischer, A., Hurricanes oder Drehstürme Westindiens, 207 †
Fishes—
Deutschen Versuche mit gezeichneten Schollen: A. C. Reichard, 322 †
Guide to gallery of fishes . . . in British Museum (Natural History), 210 †
Flahault, C., on study of Botanical Geography, 366
Flaxman island—
Flaxman Island, a glacial remnant: E. de K. Leffingwell, 108 †
Flett, J. S., Petrographical notes on products of eruptions, 1902, of Soufrière in St. Vincent, 640 †
Fleurelle, — de, Mission d'Ollone, 201 †
Flores—
Dienstreis benoorden Larantoeka (Oost-Flores): A. J. L. Couvreur, 540 †
Fordham, H. G., Hertfordshire Maps, 70 §; Notes on Cartography of Counties of England and Wales, 510
Formosa—
Îles Lequios (Formose et Riu-kiu) et Ophir: J. Denucé, 202 †
Forrest, G., Journey on Upper Salwin, October–December, 1905..239 *
Forrest, G. W., Letter from, on Asiatic Travels, 632; Selections from travels

and journals preserved in the Bombay Secretariat, 316 †, 516 §
Fortoul, J. G., Historia constitucional de Venezuela, 207 †
Foster, W., English Factories in India, 1622–1623..317 †
Foul or Foreland sound, Spitsbergen, 142
Fowle, F. E.: *see* Abbot, C. G.
Fraipont, J., Contributions à la faune du Congo, 107 †
France—
Castles and chateaux of Old Navarre and Basque Provinces: F. Miltoun, 314 †
Dépressions oligocènes dans une partie du Massif central, Sur l'extension des: P. Glangeaud, 102 †
Excursion géographique interuniversitaire autour de Paris et dans le Morvan; L. Gallois, 103 †
Forêts de la France, Anciennes: E. Clouzot, 635 †
France à vol d'oiseau: O. Réclus, 198 †, 302 §
Hydraulique et des améliorations agricoles, Direction de l', 103 †
Maps: Carte de la France (Ministre de l'Intérieur), 117 †, 324 †, 546 †; Chemins de Fer Française (Service Géo. de l'Armée), 117 †
Pénéplain du nord de la France: A. Briquet, 435 †
Pleasant land of France: R. E. Prothero, 176 §, 198 †
Populations forestières du centre de la France: A. Boyer and others, 82 §, 103 †
Recensement, Service du, Album graphique de la statistique générale de la France, 103 †
Franco-British Exhibition diploma awarded to R.G.S., 527
Frankfurt—
Statistische Handbuch der Stadt Frankfurt-am-Main, 103 †
Fraser, C., and J. H. Adams, Geology of Coromandel subdivision, Hauraki, Auckland, 110 †
Fraser, W. K., Vocabulary of Jukon language, 541 †
Frech, F., Geologische Grundlinien der Alpen, 643 †
Freire, O., Republica dos Estados Unidos do Brazil (map), 325 †
French, C., Photographs of Basutoland, 548 †
French colonies—
Cartographie des colonies françaises: C. d'Almeida, 643 †
Congrès Colonial de Bordeaux: Rapports, 643 †
Report on: Hon. R. Lister, 103 †
French voyages—
Voyages françaises à destination de la Mer du Sud avant Bougainville (1695–1749): E. W. Dahlgren, 110 §, 430 †
Freshfield, D. W., remarks on: "Douglas Glacier and its neighbourhood," 136; Through the Dinaric Alps, 635 †
Freshwater bay, Prince Charles Foreland, 149, 150
Freydenberg, H., Description géologique de l'itinéraire N'Guigmi-Bilma, 85 §, 319 †; Etude sur le Tchad et le bassin du Chari, 319 †
Freytag, G., Touristen-Wanderkarten, 643 †
Fribourg—
Plateau fribourgeois, Contribution à l'étude des cours d'eau du: G. Michel, 199 †
Friederichsen, M., Heutige Vergletscherung des Khan-Tengri Massives, 200 †
Friederici, Dr., Scientific Research in New Mecklenburg, 624
Frobenius, L., Forschungsreise in das Niger-Gebiet, 541 †
Fry, G. C., Text-book of geography, 544 †
Fuller, M. L., Summary of controlling factors of artesian flows, 441 §
Fundy, Bay of—
Currents, Tables of hourly direction and velocity of, 639 †
Furlong, G., Volcano of O Le Mauga Mu in Samoa, 511
Fuyuge people, British New Guinea, 274

G.

Gagel, C., Caldera von La Palma, 203 †
Gaillard, R., Le lac Nokoué, 203 †
Gajardo channel, Skyring Waters, 486
Gallois, L., Excurions géographique interuniversitaire autour de Paris dans le Morvan, 103 †
Gallouédec, L'.: *see* Schrader, F.
Gannett, H., and others, Commercial geography, 442 †, 616 §
Gannett, S. S., and D. H. Baldwin, Results of spirit-levelling in California, 542 †
Ganong, W. F., Notes on natural history and physiography of New Brunswick, 205 †
Garde, V., State of Ice in Arctic Seas, 1907..111 †
Garhwal—
Mountaineering in Garhwal: T. G. Longstaff, 436 †
Garrett, A. E., Fibres for fabrics, 642 †
Garrison, C. L.: *see* Gannett, H.
Garrison, W. H., remarks on "Douglas Glacier and its Neighbourhood," 137
Garwood, E. J., Sounding machine for rivers and small lakes, 535
Gasser, M., Zur Technik der Apianischen Karte von Bayern, 103 †
Gauss, Collections obtained in Antarctic regions by the, 34
Gaussberg mountain, Antarctic, 27
Gautier, E. F., Sahara Algérien, 319 †

Gautier, R., Mesure des bases géodésiques et la mesure du Tunnel du Simplon en mars 1906..105 †
Gavelin, A., Studier öfver de postglaciala nivå- och klimatförändringarna på norra delen af det småländska höglandet, 105 †
Geer, Baron de, Expedition to Spitsbergen, 534
Geinitz, E., Stoltera bei Warnemünde, 104 †
Geneva—
Geographical Congress, Ninth International, 364 *
Republic and Canton of Geneva: V. Dingelstedt, 538 †
Genghis, N., Côte d'Ivoire; fragments d'un journal de route, 107 †
Gennevaux, M., & A. Mauche, Recherches spéléologiques dans la région du Pic Saint-Loup, 434 †
Gentil, L., Itinéraires dans le Haut Atlas marocain, 541 †; Mission Louis Gentil au Maroc, 204 †; et P. Lemoine, Observations sur la géologie des pays entre l'Oubangui et le Chari, 638 †
Geodesy—
Association Géodésique Internationale, Comptes rendus des séances de la quinzième conférence, 208 †
Bedingungsgleichungen für Linienetze und für Rückwartseinschnitte: L. Krüger, 440 †
Geographer, Present and Future work of the: E. H. Hills, 390 *
Geographical Congress—
Neuvième Congrès International de Géographie, Livret des excursions scientifiques, 211 †
Ninth International Geographical Congress: G. G. Chisholm, 364 *
Geographical Course at London School of Economics, 432
Geographical Education, Progress of, 1
Geographical Literature of the Month—
Africa, 106, 202, 318, 436, 540, 638
America, 108, 205, 320, 437, 541, 639
Anthropogeography and Historical Geography, 114, 210, 442, 544, 642
Asia, 106, 200, 316, 435, 539, 637
Australasia and Pacific Islands, 110, 207, 438, 543, 641
Biography, 115, 211, 443, 544, 642
Europe, 102, 197, 314, 434, 537, 635
General, 115, 211, 443, 544, 642
Mathematical Geography, 111, 208, 440, 543
Physical and Biological Geography, 112, 208, 321, 440, 544, 641
Polar Regions, 111, 207, 439, 543, 641
Geographical location as a factor in history: E. C. Semple, 210 †
Geographical Names—
Commission on question of transcription of geographical names, 372
Geographical Societies: Australasia, South Australian Branch of, Annual Meeting, 188; Leeds and Yorkshire, Inauguration of, 536
Geographical Study of Mediterannean Man: J. L. Myres, 509
Geographisches Jahrbuch, XXX. Bd.: H. Wagner, 212 †
Geography—
Applied geography; a preliminary sketch (2nd edit.): J. Scott-Keltie, 544 †
Architecture, Geography and, 114 †
Avenir de la géographie, Développement et l': E. de Martonne, 444 †
Beobachtende Geographie und Länderkunde in ihrer neueren Entwickelung: E. Tiessen, 116 †
British Association, 1908, Geography at the, 508
College Geography: G. D. Hubbard, 444 †
Commercial geography: H. Gannett and others, 442 †, 616 §
Cosmografia e le scoperte geografiche nel secolo XVI. e i viaggi di Nicolo de Conti: V. Bellemo, 443 †
Economic geography: G. G. Chisholm, 114 †
Education, Board of, Suggestions for consideration of teachers, etc., 115 †
Geografia universal segun al procedimiento cíclico; M. R. Mejia, 643 †
Geografiens historie, 1800–1830, Et afsnit af: B. Jacobsen, 115 †
Geographischen Unterricht an Mittelschulen: R. Hödl and others, 444 †
Historical Geography on a regional basis. British Isles and Europe: E. W. Dann, 200 †, 544 †
Investigaciones sobre metodologia geográfica: R. Ballester y Castell, 643 †
Lectureships: Cambridge, 92; Sheffield, 92
Modern geography and the Copernican hypothesis: C. Robertson, 212 †
Moderno sviluppo della geografia fisica e della morfologia terrestre: O. Marinelli, 442 †
Physical geography as an essential part of school geography: T. A. Smith, 643 †
Physical geography, Practical exercises in: W. M. Davis, 544 †
Physical, etc., geography: K. Johnston, revised, by A. H. Keane, 444 †
Primer of practical geography: J. W. Henderson, 544 †
Proper Domain of Geography as a Branch of Education: W. Rosier, 365
Rational geography: E. Young, 544 †
School Geography as a Mental Discipline: R. A. Gregory, 509
School text-book of geography: L. W. Lyde, 444 †
Scientific geography, A. Book I. The World: E. W. Heaton, 211 †
Scientific method in teaching of geography: R. A. Gregory, 643 †

Geography—*continued.*
Stereoscope, Geography through the: P. Emerson and W. C. Moore, 174 §
Structural, physical, and comparative: J. W. Gregory, 545 †
Text-book of geography: G. C. Fry, 544 †
Geological Congress, Eleventh International, 1910, proposed arrangements, 627
Geology—
Introduction to geology: W. B. Scott, 544 †
Unterricht in Geologie und verwandten Fächern auf Schule und Universität: G. Steinmann, 616 §
Geophysics (*see also* Earth)—
Teoria elastica dell' isostasi terrestre: L. de Marchi, 112 †
Georgia—
Altamaha formation of coastal plain of Georgia: O. Veatch, 109 †
German Colonial school, 628
German colonies—
Deutsche Kolonialgesellschaft, 1882–1907..211 †
Deutsche Kolonialwirtschaft. Südwest Afrika: P. Rohrbach, 522 §
Jahresbericht über die Entwickelung der Schutzgebiete in Afrika und der Südsee 1906–07..116 †
Koloniale Landsvermessung: E. Kohlschütter, 116 †
German Oceanographical Expedition, 536
Germany—
Einteilung des Odenwalds in orographische Gruppen: W. Riedel, 435 †
Haustypengebiete im Deutschen Reiche: W. Pessler, 618 §, 635 †
Maps: Karte des Deutschen Reiches. (K. Preuss. Landesaufnahme), 213 †
Meteorologischen Instituts, Veröffentlichungen des K. Preuss, 636 †
Munsters Verschollene Karte von Deutschland von 1525: A. Wolkenhauer, 424 §, 435 †
Niederschlags-Beobachtungen im Jahre 1905, Ergebnisse der: G. Lüdeling, 636 †
Windrichtung in 800 Drachensaufstiegen und 44 "Abreisern" bei Hamburg: W. Köppen, 104 †
Gessmann, G. W., Tropfsteinhöhle von Lipa in Montenegro, 105 †
Ghazal, Bahr el: *see* Bahr-el-Ghazal
Ghellinck, A. de, Wasserstrassen und Eisenbahnen im freien Kongo-Staat, 203 †
Gibson, W., and others, Geology of southern part of Derbyshire and Nottinghamshire Coalfield, 315 †
Gilbert, G. K., Lake Ramparts, 190 §, 321 †
Gilbert, O., Meteorologischen Theorien des griechischen Altertums, 209 †
Gill, H. V., Some recent earthquake theories, 114 †
Gilmore, C. W., Smithsonian exploration in Alaska in 1907 in search of Pleistocene fossil vertebrates, 437 †
Giraldus, Itinerary through Wales and description of Wales, 200 †
Girardin, P., Glacier de Bézin en Maurienne, 103 †, 179 §; Sur l'allure rectiligne des rives dans les cours d'eau à méandres encaissés, 441 †; Visibility of Mountain Summits at great distances, 625
Glacial deposits—
Unterscheidung und Benennung eiszeitlicher Ablagerungen: E. Werth, 321 †
Glacial erosion—
Mode of Glacial Erosion: J. Brunhes, 367
Glaciers—
Entstehung der Blätterstruktur der Gletscher aus der Firnschichtung: H. Crammer, 321 †
International commission for study of, 136
Oscillations of, 136
Glangeaud, P., Sur l'extension des dépressions oligocènes dans une partie du Massif central, 102 †
Glaser, E., obituary, 194
Glasgow—
Geography at Glasgow University, 191
Maps: District Plan of Glasgow: J. Bartholomew, 445 †
Glinka, K. D., Schematische Bodenkarte der Erde, 642 †
Gnesotto, T.: *see* Magrini, G. P.
Gnirs, A., Beobachtungen über den Fortschritt einer Säkularen Niveauschwankung des Meeres, 91 §, 322 †
Godfrey, E. H., Settlement and agriculture development of North-West Provinces of Canada, 437 †
Goeje, Lieut. de, Tumuc-Humac expedition in Dutch Guiana, 623
Goffart, F., Congo; géographie, physique, politique, et économique, 318 †
Gold, E., Comparison of ships' barometer readings with those deduced from land observations, 441 †
Gold Coast—
Maps: Map of Gold Coast: F. G. Guggisberg, 118 †, 214 †, 325 †, 446 †
Northern Territories: A. E. G. Watherston, 638 †
Topographical Surveys in, 397
Goldie, Sir G. T., Address to Royal Geographical Society, 1908..1 *; Remarks on: "Balkan Geography and Balkan Railways," 234; "Douglas Glacier and its Neighbourhood," 134; "Exploration in Southern Nigeria," 21; "Exploration of Prince Charles Foreland," 148; presenting Medals and other awards, 96, 97
Gordon, H. W.: *see* Morris, Sir W. G.
Gorjanović-Kramberger, K., Geotectonischen Verhältnisse des Agramer Gebirges, 198 †
Götzinger, G., Round-backed ridges in mountain districts, 431

Govi, S., Di alcune salse della provincie di Modena e Reggio, 636 †
Graham Island, B.C., Report on: R. W. Ells, 437 †
Grampians—
Geology and scenery of Grampians and valley of Strathmore: P. Macnair, 315 †
Grant, R. D., Changes in Yellowstone Park, 640 †
Grant, W. L., Northward Expansion of Canada, 510.
Grasso, G., "Nostrum Mare," 104 †
Gratacap, L. P., A trip around Iceland, 198 †
Grauert, H., und O. Hartig, Entdeckung eines Verstorbenen zur Geschichte der grossen Länderentdeckungen, 443 †
Great Barrier, Queensland, Coral Reefs of the: C. Hedley and T. G. Taylor, 533 §, 641 †
Greece—
Délos et la transgression actuelle des mers: P. Négris, 104 †
Guide to Greece, the Archipelago, etc. (Macmillan & Co.), 199 †, 302 §
Topography of North-Western Greece, Contribution to: C. M. Church and J. L. Myres, 47 *
Green, W. S., Ireland: her Coasts and Rivers, 509
Green bay, Newfoundland, 157, 158
Greenland, East, Erichsen Expedition, 311
Gregory, J. W., Australia and New Zealand. Stanford's Compendium of Geography and Travel, 78 §; Geography; structural, physical, and comparative, 545 †; Recent Literature on Plan of the Earth, 151 *; Some Scientific Results of Antarctic Expeditions 1901–1904..25 *
Gregory, R. A., School Geography as a Mental Discipline, 509; Scientific method in teaching of geography, 643 †
Grenfell, George, and the Congo: Sir H. Johnston, 320 †
Gribaudi, P., Sul nome "Terra di Lavoro," 104 †
Griggs, J., Mines of Chihuahua, 205 †
Grucker, E., Die Vogesen, 316 †
Grund, A., Entstehung und Geschichte des Adriatischen Meeres, 102 †
Guanare, Venezuela, 334
Guébriant, — de, Chez les Lolos, 436 †
Guggisberg, F. G., Map of Gold Coast, 118 †, 214 †, 325 †, 446 †
Guiana—
Dutch: Tumuc-Humac Expedition under Lieut. de Goeje, 623; Wetenschappelijke expeditie naar het binnenland van Suriname: L. A. Bakhuis, 206 †
Exploration in, 310
Guilleman, —, Ergebnisse geologischer Forschung im Deutschen Schutzgebiet Kamerun, 108 †
Guillemard, F. H. H., Malaysia and Pacific Archipelagoes. Stanford's Compendium of Geography and Travel (2nd edit.), 439 †
Guinea, Spanish—
Demarcación de la frontera septentrional de la Guinea Continental Española: E. d'Almonte, 541 †
Gülland, A., Klima von Swakopmund, 107 †
Gunther, R. T., Bibliography of topographical and geological works on the Phlegræan Fields, 198 †
Güssfeldt, P., and others, Die Loango-Expedition, 204 †
Gwinnell, R. F., A hill Country; its physical features and their significance, 539 †
Gyuk Su, Asia Minor, 561

H.

Haan, E. de, Explorations in Dutch Guiana, 310
Haas, H., Zur Geographie und Geologie Canadas und des arktischen Archipels von Nord-amerika, 639 †
Habenicht, H., Das Velometer, 112 †
Haddon, A. C., Nieuwenhuis' "Quer durch Borneo," 517 §
Hadhenah range, 566
Hahn, E., Entstehung der wirtschaftlichen Arbeit, 210 †
Haïnan—
Mission Madrolle, 84 §, 201 †
Halbfass, W., Inwieweit kann die Seenkunde die Lösung Klimatologischer Probleme fördern? 112 †; Klimatologische Probleme im Lichte moderner Seenforschung, 208 †
Halfa, Wadi—
Cataract at, 464
Water supply of, 455
Hall, C. R., Photographs of Murchison Falls and Fola rapids, Uganda, 216 †
Hall sound, New Guinea, 271
Hallberg, I., Extrême Orient dans la littérature et la cartographie de l'Occident des XIII^e, XIV^e, et XV^e siècles, 200 †
Halle, E. von, Weltwirtschaft; ein Jahr- und Lesebuch, 210 †
Hamad, Unknown parts of, 556
Hamy, E.-T., Correspondance d'Alexandre de Humboldt avec François Arago, 211 †
Hangchow—
Visit to the Hangchow bore: C. K. Edmunds, 106 †
Hannek cataract, Nile, 464
Hardcastle, J. L., Gift of Portrait of Livingstone to R.G.S., 618
Harms, H., Erdkunde in entwickelnder anschaulicher Darstellung, 538 †
Harris, R. A., Manual of tides, 322 †
Harrison, A. H., Arctic Expedition, 3; In Search of a Polar Continent, 615 §

Hart, T. S., Highlands and main divide of Western Victoria, 90 §, 207 †
Hartig, O.: *see* Grauert, H.
Hassert, K., and F. Thorbecke, Landeskundliche Expedition in Kamerun, 108 †, 184 §, 530
Haupt, L. M., Waterways problem, 542 †
Hauran district, 572
Hausa Reading Book: L. Charlton, 204 †, 302 §
Hauthal, R., Schmelzformen des Firns im tropischen und subtropischen Hochgebirge, 112 †
Hayden, H. H. (*see also* Burrard, S. G.), Geology of provinces of Tsang and Ü, in Central Tibet, 201 †
Heaton, E. W., A scientific geography. Book I. The World, 211 †
Hedin, S., Expedition in Tibet, 306, 426; Expedition in Tibet: C. H. D. Ryder, 585; Map showing routes during journeys in Tibet, 527; My Discoveries in Tibet, 539 †
Hedley, C., and T. G. Taylor, Coral Reefs of Great Barrier, Queensland, 533 §, 641 †
Heilprin, A., Eruption of Pelée, 438 †
Heim, A., Bau der Schweizeralpen, 197 †
Heinrichs, A., Etat des glaces et des neiges en Finlande pendant l'hiver, 1895–1896..105 †
Hejaz railway—
  Hedschasbahn. II. Ma'ân bis El 'Ula: Auler Pasha, 305 §, 540 †
  Hejaz Railway: F. R. Maunsell, 570 *
  Maps: Hedschas-Bahn zwischen der Stationen Ma'ân und El 'Ula: Auler Pasha, 214 †
Heller, —, Tatigkeit des bayer. Topographischen Bureaus in den letzten 10 Jahren, 198 †
Hellwig, R. L. A., Arbeid van het exploratie-detachement in Zuid-Nieuw-Guinea, 439 †
Henderson, J. W., A primer of practical geography, 544 †
Henshaw, F., and C. C. Covert, Water-supply investigations in Alaska, 437 †
Herbst, J. F., Report on Southern Kalahari, 513
Hermann, P., Island in Vergangenheit und Gegenwart, 164 §
Hertfordshire Maps. Descriptive Catalogue of Maps of the County, 1579-1900: H. G. Fordham, 70 §
Hertslet, G. P., Treaties, etc., between Great Britain and China, 316 †
Hessen—
  Hydrographie des Westerwaldes: F. Loos, 435 †
Hetch-Hetchy Valley: J. Muir, 321 †
Hettner, A., Geographie des Menschen, 114 †; Geographische Einteilung der Erdoberfläche, 322 †
Hey, E., Débacle et la Congélation de la Volga, 105 †
Hickson, S. J., on Cœlenterata and hydroids of Antarctic, 30
Hilfiker, J., Neues Präzisionsnivellement auf den Grossen St. Bernhard, 197 †
Hill, C. A., Mitchelstown Cave, County Tipperary, 512
Hill, R. T., Growth and decay of Merican plateau, 320 †
Hill-Tout, C., Report on ethnology of south-eastern tribes of Vancouver Island, 205 †
Hills, E. H., Present and Future work of the Geographer, 390 *
Hilton-Johnson, A. H.: *see* Davies, H. R.
Himalaya—
  Geography and Geology of Himalaya Mountains and Tibet, Sketch of: S. G. Burrard and H. H. Hayden, 316 †, 416 §
  Ice-bound Heights of the Mustagh: W. H. and F. B. Workman, 71 §
  Local attraction of, 417
  Nieves Penitentes in Himalaya: W. H. Workman, 436 †
Hirschi, H., Reisen in Nordwest Neu-Guinea, 641 †
Hispar Glacier, Further Exploration of: F. B. Workman, 495 *
History, Teaching of: O. Jäger, 211 †
Hjort, J., Some results of International ocean research, 113 †; und N. Knipowitsch, Lebensverhältnisse und den Fang der nordischen Seehunde, 111 †
Hodgson, C. W., Map of Philippine Islands, 325 †
Hodgson, T. V., on Pycnogonida of Antarctic, 30, 40
Hodson, T. C., The Meitheis, 539 †
Hogarth, D. G., Problems in Exploration: I. Western Asia, 549 *; remarks on: "Balkan Geography and Balkan Railways," 234; "Some geographical Aspects of the Nile," 477
Högbom, A. G., Till frågan om de norrländska älfvarnas vattenhushållning, 538 †
Hokkaido, Report on the (Foreign Office Rep.), 539 †
Holdich, Sir T., remarks on: "Problems in Exploration," 564; receiving diploma on behalf of Ram Singh, 97; proposing Vote of Thanks to Sir G. Goldie, 98
Holding, T. H., Campers' Handbook, 303 §
Holland—
  Nomina Geographica Neerlandica, 636 †
Holmes, B. F., Log of the *Laura* in Polar Seas, 177 §, 208 †
Homer's Geography—
  Appunti di topografia omerica: A. Della Seta, 210 †
Hong Kong—
  Villages in . . . New Territory of Hong Kong, List of, 436 †
Horace Walker stream and glacier, New Zealand, 129

Hormuzd Dagh, 566
Horváth, K., Siedelungsgeographie des Zala-Tales, 198 †
Hough, W., Antiquities of upper Gila and Salt river valleys in Arizona and New Mexico, 542 †
House Types in Germany, Distribution of, 618
Houston, E. J.: *see* Gannett, H.
Hubbard, G. D., Ancient finger lakes in Ohio, 321 †; College Geography, 444 †
Hubbard, L., A woman's way through unknown Labrador, 205 †, 614 §
Hubert, H., La "barre" au Dahomey, 185 §, 320 †; Mission scientifique au Dahomey, 436 †
Hudson, W. H., Land's End; a naturalist's impressions in West Cornwall, 315 †, 422 §
Hug, J., Geologie der nordlichen Teile des Kantons Zürich, 538 †
Humboldt—
Correspondance d'Alexandre de Humboldt avec François Arago: E.-T. Hamy, 211 †
Hume, W. F., Preliminary Report on Geology of Eastern Desert of Egypt, 72 §; Topography and Geology of Peninsula of Sinai (S.-E. Portion), 520 §
Hunan—
Missions Pierre Bons d'Anty, 201 †
Hungary—
Deutsche Ortsnamen im Norden Siebenbürgens: G. Kisch, 104 †
Geotectonischen Verhältnisse des Agramer Gebirges: K. Gorjanović-Kramberger, 198 †
Hungary and the Hungarians: W. B. Forster Bovill, 617 §
Lagerveränderungen des Tiszabettes: J. von Cholnoky, 104 †
Siedelungsgeographie des Zala-Tales: K. Horváth, 198 †
Huntington, E., An archipelago of sand-dunes in a lake of Central Asia, 106 †; Coincident activities of Earth and Sun, 441 †
Hunza-Nagar and Hispar Glacier, Further Exploration in the: Mrs. F. B. Workman, 495 *
Hydrology—
Déboisement et les inondations: L. F. Tessier, 441 †
Water in saturated soils, Lines of flow of: L. F. Richardson, 441 †
Hypsometer—
Neue Studien über das Hypsometer: H. Mohn, 440 †
Hythe Beds area of West Malling and Maidstone, Solution-subsidence Valleys and Swallow-holes within the: F. J. Bennett, 277 *

I.

Ice—
Gletschern und Inlandeis, Beobachtungen an: E. von Drygalski, 441 †
Ice—*continued.*
Ground or anchor ice, Formation of: H. T. Barnes, 441 †
Ice-forms—
Schmelzformen des Firns im tropischen und subtropischen Hochgebirge: R. Hauthal and others, 112 †
Iceland—
Expedition under W. von Knebel, Fate of, 528
Handelssted Gásar (at Gásum), Yngre Gaesir, ved Øfjord: F. Jonsson og D. Bruun, 636 †
Island in Vergangenheit und Gegenwart: P. Hermann, 164 §
Knebels Islandexpedition im Sommer 1907: H. Spethmann, 435 †
Meddelelser om Generalstabens Arbejde paa Island i Sommeren, 1907: P. F. Jensen, 104 †
Snow-cones in Iceland, Formation of: H. Spethmann, 312
Trip around Iceland: L. P. Gratacap, 198 †
Ihering, H. von, Archhelenis und Archinotis, 169 †; Landeskunde der Republik Brasilien, 543 †
Ihni tribe, Southern Nigeria, 6
Illinois—
Capacity for population, 388
India—
Edinburgh to India and Burmah, From: W. G. Burn Murdoch, 316 †
English factories in India, 1622–1623: W. Foster, 317 †
Imperial Gazetteer of India, 316 †, 637 †
North-West Frontier Province Gazetteer; Bannu district, 317 †
Portugueza, A India: H. de Brion, 637 †
Real India: J. D. Rees, 176 §
Survey of India, Extracts from Narrative Reports, 1905–1906..83 §, 202 †
Indian ocean—
Maps: Meteorological Atlas of Indian Seas and North Indian Ocean: W. L. Dallas, 300 §; Monthly Meteorological Charts of Indian Ocean and Red Sea (Met. Office, London), 120 †, 215 †, 327 †, 448 †, 548 †, 648 †
Oceanographische en meteorologische waarnemingen in den Indischen Ocean, 642 †
Indo-China—
Maps: Carte de la Commission de Délimitation entre l'Indo-Chine et le Siam, 445 †
Insects—
Guide to exhibited series of Insects, British Museum (Natural History), 210 †
Intrusion—
Igneous Intrusion, Mechanics of: R. A. Daly, 641 †
Intrusionen und tektonischen Storungen, Ueber: E. Philippi, 641 †

Inundations—
Déboisement et les inondations: L. F. Tessier, 441 †
Ippen, T. A., Gebirge des nordwestlichen Albaniens, 539 †
Iran—
Plateau de l'Iran: A. Merchier, 637 †
Ireland—
Black rain in Ireland, October 8–9, 1907: O. Boeddicker, 200 †
Ireland: her Coasts and Rivers: W. S. Green, 509
Rainfall, Geographical Distribution of, 60
Iron Gates—
Entwickelungsgeschichte des Eisernen Tores: J. Cvijić, 102 §
Irtysh river—
Salz- und Bittersee-gebiet zwischen Irtysch und Ob: R. Brecht, 202 †
Isachsen, G., Glaces autour de Spitsberg en 1907..111 †; Isforholdene omkring Spitsbergen 1907..111 †; Nordboernes faerder til Forderseta, 115 †; Om opdagelsen af Svalbard, 115 †; Plan for en ny polar ekspedition, 111 †; Spitsbergenekspeditionen, 1906..111 †
Isker river, Balkan peninsula, 219
Istria—
Halbinsel Istrien: N. Krebs, 293 §
Verbogne Verebnungsflächen in Istrien: N. Krebs, 102 †
Italy—
Fenomeni Carsici nel gessi della Val d'Era: G. Stefanini, 104 †
Geonomastica Polésana: A. Lorenzi, 435 †
Lago di Co' di Lago (Devero, Ossola): P. Revelli, 435 †
Nome "Terra di Lavoro": P. Gribaudi, 104 †
Novo contributo geonomastico, bacino superiore del fiume Brenta: A. Prati, 104 †
Shakespeare and his knowledge of Waterways of Northern Italy: Sir E. Sullivan, 619
Studi geografici sulle frane in Italia: R. Almagià, 199 †
Sunny days in Italy: E. Lathrop, 176 §
Ivchenko, A., Stratification dans les dépôts éoliens, 440 †
Ivory Coast—
Côte d'Ivoire; fragments d'un journal de route: N. Genghis, 107 †
Forêt vierge de la Côte d'Ivoire: A. Chevalier, 540 †
Frontières de la côte d'Ivoire de la côte d'Or et du Soudan: M. Delafosse, 296 §
Iwojima islands, Japan—
Ephemeral volcanic island in Iwôjima Group: T. Wakimizu, 317 †, 529 §

J.

Jacobi, P. I., Viatiches of the Orel Government, 315 †
Jacobsen, B., Et afsnit af geografiens historie, 1800–1830..115 †
Jäderholm, E., on hydroid collection of Swedish Antarctic expedition, 44
Jaeger, F., Krater, Caldera, und Barranco, 442; † Vorläufiger Bericht über eine Forschungsreise in das abflusslose Gebiet Deutsch-Ost-Afrikas, 203 †
Jaeger, J., Bruck an der Amper, 198 †
Jäger, O., Teaching of History, 211 †
Jaggar, T. A., Evolution of Bogoslof Volcano, 621; Experiments illustrating erosion and sedimentation, 209 †
Jahn, A., Palmas de la flora venezolana, 438 †
Jamieson, T. F., on changes of level and production of raised beaches, 209 †
Japan—
Ephemeral Volcanic Island in Iwôjima Group: T. Wakimizu, 317 †, 529 §
Maps: Topographical map of Japan (Imp. Geol. Survey), 644 †
Sea-level along Japanese coasts, Annual variation of height of: F. Omori, 540 †
Topography of Japan: N. Yamasaki, 540 †
Jardim, F., Uma inscripção portugueza em Ormuz, 637 †
Jauker, O., Geographische Element bei den Römerstrassen, 82 §, 197 †; History of Settlement of Alps and Karst Lands, 180
Java—
Capacity for Population, 387
Java-Oorlog van 1825–30; E. S. de Klerck, 637 †
Jeans, J. H., Stability of a spherical Nebula, 151; Vibrations and Stability of a Gravitating Planet, 151
Jebel, Bahr el: *see* Bahr-el-Jebel
Jefferson, M., World diagrams of population, etc., 115 †
Jensen, P. F., Meddelelser om Generalstabens Arbejde paa Island i Sommeren 1907..104 †
Jephson, A. J. M., obituary, 630
Jersey—
Maps: New Survey Map of Jersey: J. G. Bartholomew and G. A. Piquet, 323 †
Jerusalem—
Topography, economics, and history from earliest times to A.D. 70: G. A. Smith, 318 †
Jimbō, K., Preliminary Notes on Geology of Japanese Sakhalin, 620 §, 637 †
Jiu river, Rumania, 425
Johnson, D. W., Drainage modifications in Tallulah district, 109 †
Johnson, E. R., Geographic influences affecting early development of American commerce, 321 †
Johnson, T. B., Tramps round mountains of the Moon, 318 †
Johnson, W. H., Journeys in Himalayas, letter from T. G. Longstaff on, 94

Johnston, Sir H., George Grenfell and the Congo, 320 †
Johnston, K., Physical, historical, political and descriptive Geography; revised: A. H. Keane, 444 †
Johnston, R. F., From Peking to Mandalay, 164 §, 201 †
Johnston, W. & A. K., Royal Atlas of Modern Geography, 326 †
Jolivet, J., map of Berry: A. Vacher, 528
Jonsson, F., og D. Bruun, Det gamle Handelssted Gásar (at Gásum), yngre Gaesir, ved Øfjord, 636 †
Joubin, L., Études sur les gisements de mollusques comestibles des Côtes de France, 434 †
Juraschek, F. von: *see* Brachelli, H. F.

K.

Kabru, Ascent of: C. W. Rubenson, 202 †
Kaffa—
  Staatliche Leben des Kaffitscho: F. J. Bieber, 436 †
Kalahari—
  Buschmänner der Kalahari: S. Passarge, 167 §
  Southern Kalahari, Report: J. F. Herbst, 513
Kamerun—
  Boundary between French Congo and Kamerun, 87
  Délimitation franco-allemande du Cameroun; A. Terrier, 639 †
  Deutsch-französische Grenzabkommen, betreffend Kamerun und den Congo français, 87 §, 320 †
  Erkundungs-Expedition Zwischen Wuri und Sanaga: Baron v. Stein, 307 §, 540 †
  Explorations by Baron von Stein, 307
  Geologischer Forschung im Deutschen Schutzgebiet Kamerun: Guilleman, 108 †
  Landeskundliche Expedition der K. Hassert und F. Thorbecke in Kamerun, 108 †, 184 §, 530
  Längs der Ostgrenze von Kamerun: Freiherr von Reitzenstein, 320 †
  Maps: Cameroons (Top. Section, General Staff), 547 †
  Mission Moll: la délimitation du Cameroun: A. Terrier, 108 †
  Totensee bei Nssakpé: Mansfeld, 108 †
  Vom Atlantik zum Tschadsee: H. Dominik, 318 †
Karangarua river and valley, New Zealand, 122, 130
Karashahr, Ruins near, Central Asia, 347
Karst—
  Lindner-Timavo und seine Bedeutung für das Studium der Karsthydrographie: F. Mühlhofer, 635 †
Karst Lands, Settlement of, 180
Kashmir, In and about: A. L. Mumm, 637 †
Katanga—
  Mission scientifique du Ka-Tanga. Résultats des observations, etc.: C. Lemaire, 203 †
  Travaux et résultats de l'expédition de la Khatanga (1905): H. Backlund, 318 †
  Voies d'accès au Katanga: A. J. Wauters, 436 †
Kayan people of Borneo, 517
Keane, A. H., Chevalier's "L'Afrique Centrale Française," 73 §; Passarge's "Südafrika," 75 §; World's Peoples, 421 §
Keele, J., Report on upper Stewart river region, Yukon, 437 †
Keeling, B. F. E., Magnetic observations in Egypt, 1895–1905..204 †
Kelaat-i-Mudeverre, Arabia, 576
Keltie, J. S., Applied geography; a preliminary sketch (2nd edit.), 544 †
Kengtung State, Surveys in: R. H. Phillimore, 84
Kentucky—
  Maps: First Map of Kentucky: J. Filson, 646 †
Kerguelen island, Flora of, 33
Keriya river, Central Asia, 350, 600
Kerner, F. v., Revision der zonaren Niederschlagsverteilung, 112 †
Kew Observatory, Magnetic declination at, 1890–1900: C. Chree, 636 †
Kharga oasis—
  Flowing wells and sub-surface water in Kharga Oasis: H. J. L. Beadnell, 107 †
Khartum—
  Maps: Provisional Map of Khartoum City, etc.: E. A. Stanton, 645 †
  Rainfall and volume of Nile at, 460
Khirghiz nomads and influence of high plateaus: E. Huntington, 637 †
Khora ruins, Central Asia, 348
Khotan river, Sources of, 599
Kiewel, O., Ergebnisse der Höhenmessungen von A. Philippson im südwestlichen Kleinasien im 1904..540 †
King, W. F., and O. H. Tittmann, Alaska Boundary Demarcation, 532
Kirkhope, H., Photographs of China, 328 †
Kirkpatrick, R., on sponges of the Antarctic, 31
Kisch, G., Deutsche Ortsnamen im Norden Siebenbürgens, 104 †
Kivu lake, Central Africa, 307
Klerck, E. S. de, De Java-Oorlog van 1825-30..637 †
Knebel, W. von, Fate of, 528
Knocke, W., Expedition to Andean tableland, 533
Knörzer, A., Temperaturanomalien in Mitteleuropa, 434 †
Knott, C. G., Seismic radiations, 322 †
Koch-Grünberg, D. T., Einige Bemerkungen zu der Forschungsreise des Dr. H. Rice in den Gebieten zwischen Guaviare und Caquetá-Yapurà, 438 †

Koenigswald, G. von, Botokuden in Südbrasilien, 110 †
Köhler, P. O., Entstehung der Kontinente, der Vulkane und Gebirge, 440 †
Kohlschütter E., Koloniale Landsvermessung, 116 †; Triangulation und Messtisch-Aufnahme des Ukinga-Gebirges, 107 †
Kolchak, A., Last expedition to Bennett Island, sent . . . in search of Baron Toll, 111 †
Koldewey, C. C., obituary, 191
Komor, Iles, Râmny, . . . des géographes arabes: G. Ferrand, 115 †
Konia-Bagdad, Chemin de fer de: F. Vanier, 202 †
Köppen, W., Windrichtung in 800 Drachensaufstiegen und 44 "Abreisern" bei Hamburg, 104 †
Korea—
In Korea with Marquis Ito: G. T. Ladd, 202 †
Korla, Central Asia, 349
Körösy, J. v. (Biography): G. Thirring, 211 †
Kovio people, British New Guinea, 274
Koyukuk and Koyuk rivers, Alaska, Country between, 187
Kozloff, P. K., Central Asian Expedition, 529; Mongolia and Kham. Works of expedition of Imperial Russian Geographical Society, 201 †, 519 §
Krakatoa—
Flora der Vulkaninsel Krakatau: A. Ernst, 317 †, 428 §
Krämer, A., Karte von Babeldáob und Politische Uebersichtskarte der Yap-Inseln, 447 †
Krassnow, A. v., Länderkunde von Europa Russland, 294 §
Krause, F., Pueblo Indianer, 109 †
Krebs, N., Die Halbinsel Istrien, 293 §; Verbogene Verebnungsflächen in Istrien, 102 †
Kremser, V., Einfluss der Grossstädte auf die Luftfeuchtigkeit, 441 †, 536 §
Kroeber, A. L., On evidences of occupation of certain regions by Miwok Indians, 321 †
Krüger, L., Bedingungsgleichungen für Liniennetze und für Rückwärtseinschnitte, 440 †
Krummel, O., Handbuch der Ozeanographie, 300 §
Kuchar oasis, Central Asia, Ruins at, 349
Kuen-Lun—
Ascents in the Kuen-Lun, W. H. Johnson's: T. G. Longstaff, letter on, 94, 540 †
Mountain panoramas from the Pamirs and Kwen Lun: M. A. Stein, 316 †
Künzli, E.: *see* Buxtorf, A.
Kürchhoff, D., Alte und neue Handelsstrassen . . . an den Afrikanischen Küsten, 541 †
Kurdistan, Unexplored parts of, 557, 559
Kuruman river, Southern Kalahari, 514
Kwei-chou—
Mission d'Ollone: De Fleurelle, 201 †

L.

Labour—
Geographical distribution of labour: H. C. Angus, 114 †
Labrador—
Long Labrador trail: D. Wallace, 320 †
Woman's way through unknown Labrador: Mrs. L. Hubbard, 205 †, 614 §
Lacroix, A., Sur la récente éruption de l'Etna, 435 †
Ladd, G. T., In Korea with Marquis Ito, 202 †
Lahache, J., Desséchement de l'Afrique française est-il démontré? 202 †
Lahee, F. H., An Alluvial Fan, near Field in British Columbia, 639 †
Lakes—
Instructions for study of lakes, 322 †
Lake Ramparts: G. K. Gilbert, 190 §, 321 †
Respiration of an inland lake: E. A. Birge, 190 §, 322 †
Lâmery, Iles, Râmny, . . . des géographes arabes: G. Ferrand, 115 †
Lammens, P. H., Maronites, Mazonitai, et Mazoun du 'Oman, 637 †; Massif du Gabal Sim'an et les Yézidis de Syrie, 638 †
Lancrenon, P., De la Sanga au Logone, 107 †; Exploration entre la Sangha et le Logone, 107 †
Landsborough valley, New Zealand, 123, 131
Land's End: W. H. Hudson, 422 §
Lang, J., Outposts of Empire, 544 †
Lang, W. H., Australia (Romance of Empire Series), 177 §, 207 †
Lange, G., River Pilcomayo from its Discharge into River Paraguay to Parallel 22° S., 523 §
Langley hole, Kent, 280
Lapps—
Svenska nomadlapparnas flyttningar til Norge i äldre och nyare tid: K. B. Wiklund, 315 †
Larden, W., Guide to walks and climbs around Arolla, 635 †
Larrabure i Correa, C., Coleccion de leyes . . . al Departamento de Loreto, 206 †
Larras, N., Cartes de Reconnaissance du Maroc, 446 †
Las Casas—
Bischof Bartolomé de las Casas, ein Zeitgenosse des Columbus: O. Stoll, 642 †
Lathrop, E., Sunny Days in Italy, 176 §
Laurier river, British North America, 275
Lauterer, J., Mexico, 205 †
Lazistan, Black sea, 566
Leach, W. W., Telkwa river and vicinity, B.C., 437 †
Leeds and Yorkshire Geographical Society Inauguration of, 536

Leffingwell, E. de K., Flaxman island, a glacial remnant, 108 †
Legendre, A. F., Journeys in Western Se-chuan, 183
Legendre, R., Recherches océanographiques faites dans la région littorale de Concarneau, 103 †
Legge, Colonel, Exploration of Ben Lomond range, Tasmania, 624
Lemaire, C., Mission scientifique du Ka-Tanga. Résultats des observations, etc., 203 †
Lemoine, P.: *see* Gentil, L.
Len valley, Kent, 287
Lendenfeldt, R. von, on sponges of the Antarctic, 35
Lenfant, E., Mission du haut Logone, 203 †
Leroy-Beaulieu, P., De la colonization chez les peuples modernes, 210 †
Lesdain, Count de, From Pekin to Sikkim through the Ordos, Gobi Desert, and Tibet, 201 †, 295 §; Travels across Asia: C. E. D. Black, 106 †
Leutwein, T., Elf Jahre Gouverneur in Deutsche Südwestafrika, 169 §
Levant Company, Early History of: M. Epstein, 423 §, 443 †
Levasseur, E., Mappa da Republica dos Estados-Unidos do Brazil, 646 †
Lévi, S., Le Nepal: Étude historique d'un royaume hindou, 317 †
Lewis, G. R., Stannaries: a study of English tin-miner, 200 †, 610 §
Lewis, P. E., Panorama drawing from nature and from maps, etc., 208 †
Leyst, E., Höfe um Sonne und Mond in Russland, 105 †; Ueber Schätzung der Bewolkungsgrade, 112 †
Libby, O. G., Physiography as a factor in community life, 437 †
Liberia—
  Franco-Liberian boundary, 531
  Petrology and physiography of Western Liberia, Note on: J. Parkinson, 541 †
Libyan desert, Oases of, 568
Lichiang range, Yunnan, 257
Limnology—
  Inwieweit kann die Seenkunde die Lösung Klimatologischer Probleme fördern? W. Halbfass, 112 †
Lindeman, M., Aus frühern und neuern Forschungsreisen in das Nordpolarmeer, 641 †
Linosa and its rocks: H. S. Washington, 104 †
Lintum, C. te, De oorzaken van Rotterdam's opkomst en ontwikkeling, 435 †
Lissoo tribe of upper Salwin, 260
Lister, Hon. R., Report upon French Colonies, 103 †
Little, A., obituary, 629
Litton, G. J. L., Journey on the Upper Salwin, 239
Liverpool bay—
  Maps: Chart of Liverpool Bay: H. Belam, 215 †
Livingstone, David, Gift of Portrait of, to R.G.S., 618
Lobley, J., American Fauna and its origin, 437 †
Locussol, E., Régions naturelles du Velay, 198 †
Logone—
  Mission du haut Logone: E. Lenfant, 203 †
  Sanga au Logone, De la: P. Lancrenon, 107 †
  Sangha et le Logone, Exploration entre la: P. Lancrenon, 107 †
Lohmann, H., on Marine Acari of the Antarctic, 34
Lolos—
  Chez les Lolos: R. P. de Guébriant, 436 †
  D'Ollone's journey in country of, 183
  Lolos, Les: H. Cordier, 106 †
Lo-ma-di, Yunnan, 254
Lomas, H. M., Photographs of British North Borneo, 215 †
Lönborg, S., Swedish maps, 213 †
London—
  Handbook for travellers: K. Baedeker, 315 †
Longitude—
  Wade's Method of determining Longitude: E. J. Scott, 65 *
Longstaff, T. G., letter from, on W. H. Johnson's Journeys in Himalayas, 94; Mountaineering in Garhwal, 436 †; Note on W. H. Johnson's ascents in Kuen-Lun, 540 †; remarks on receiving Gill Memorial, 96
Lönnberg, —, on fish collection of Swedish Antarctic Expedition, 43
Loos, F., Zur Hydrographie des Westerwaldes, 435 †
Loose valley, Kent, 286
Lopez, T., Géographe, son œuvre: G. Marcel, 115 †, 312 §
Lorenzi, A., Geonomastica Polésana, 435 †
Loreto—
  Coleccion de leyes . . . al Departamento de Loreto: C. Larrabure i Correa, 206 †
Lorié, J., Terrassen langs den rechter Rijnoever, beneden het zevengebergte, 198 †
Lot: Padirac, Rocamadour, Lacave: A. Viré, 538 †
Love, A. E. H., Dynamical theory of shape of Earth, 154 §, 209 †; Figure and constitution of the Earth, 154 §, 209 †; Note on representation of Earth's surface by means of spherical harmonics of first three degrees, 642 †
Low, W. P., Gbari grammar, notes, and vocabulary, 541 †
Löwl, F., obituary, 194
Luama river—
  Esplorazione compiuta sul fiume Luama affluente del Congo: A. Sacerdote, 107 †
Lucerna, R., Gletscherspuren in den Steiner Alpen, 102 †

Lu-chang, Yunnan, 242
Lüdeling, G., Ergebnisse der Niederschlags-Beobachtungen im Jahre 1905 ..636 †
Ludwig Salvator, Archduke, Versuch einer Geschichte von Parga, 539 †
Lüneburg heath—
Lüneburger Heide: K. Olbricht, 104 †
Lütgens, R., expedition for study of evaporation over the sea, 536
Lycia, Highlands of, 560
Lyde, L. W., A school text-book of geography, 444 †; remarks on "Balkan Geography and Balkan Railways," 238
Lynch, C. W. D., Note on map of part of North-Western Rhodesia, 597
Lynch, H. F. B., Anglo-Russian convention, 637 †
Lyons, H. G., Civil Time in Egypt, 107 †; Longitudinal section of river Nile, 511; Some Geographical Aspects of the Nile, 449 *; Some unsolved problems of Nile Basin, 318 †; Survey of Egypt, 369

M.

Maan, Hejaz railway, 575
Maas, O., Bemerkungen zu Simroths Pendulationstheorie, 441 †
MacAlister, D., letter from, on Juju oracle in South Nigeria, 195
Macartney, George, Earl of, An account of the life of: H. H. Robbins, 176 §
Macdonell, A., In the Abruzzi, 538 †, 617 §
MacDougal, D. T., Desert basins of Colorado delta, 109 †; More changes of the Colorado River, 109 †
Macedonia—
Condition of, 235; Macedonia and the reforms, 200 †
M'Farlane, J., Port of Manchester; Influence of a Great Canal, 496 *, 629
MacFarlane, R., Notes on mammals and birds of North Canada, 542 †
McGee, W J, Our inland Waterways, 89 §, 321 †
Machaček, F., Nouvelles observations géomorphologiques sur le massif de la Bohême, 102 †; Ueber Rückzugsmoränen in Norwegen, 314 †
Mackenzie river—
On the Mackenzie River: V. Stefansson, 205 †
Through the Mackenzie Basin: C. Mair, 542 †
McKerrow glacier, New Zealand, 131, 132
Mackinder, H. J., Rhine: its Valley and History, 611 §; remarks on "Balkan Geography and Balkan Railways," 236; Stanford's new orographical map of Australasia, 118 †
McLean, J., Informe sobre exploración al Chaco, 640 †
Macmillan's Orographical Map of Europe: A. W. Andrews and B. B. Dickenson, 445 †
Macnair, P., Geology and Scenery of Grampians and valley of Strathmore, 315 †
MacNutt, F. A., Letters of Cortes, 320 †
Macphail, J. A., Santals of Bengal, 202 †
McPherson, J. L., Report of reconnaissance and preliminary survey of land route . . . in Alaska for mail and pack trail, 108 †, 187 §
Macrinoros, Greece, 52
Madagascar—
Géographes arabes et Madagascar: G. Ferrand, 115 †
Lacs de Madagascar. Région du lac Itasy: H. Berthier, 541 †
Madrolle, M., Mission dans l'île de Haïnan, 84 §, 201 †
Magellanian Expedition, Swedish, Preliminary Reports: C. Skottsberg, 485 *, 591 *
Magnaghi, A., Atlante manoscritto di Battista Agnese della Biblioteca Reale di Torino, 443 †
Magnetic declination at Kew Observatory, 1890—1900: C. Chree, 636 †
Magoffin, R. van D., Study of topography and municipal history of Præneste, 636 †
Magrini, G. P., and others, Richerche Lagunari, 314 †
Mair, C., Through the Mackenzie Basin, 542 †
Malay archipelago—
Malaio-polynesische Forschungen: R. Brandstetter, 317 †
Maps: Overzichtskaart van den Oost-Indischen Archipel, 117 †
Physiografische Problemen in den Indischen Archipel: J. van Baren, 317 †
Malay peninsula—
Hevea Brasiliensis or Para rubber in Malay Peninsula: W. F. C. Asimont, 540 †
Malay States—
Twentieth century impressions of British Malaya: A. Wright and H. A. Cartwright, 540 †
Malaysia—
Stanford's Compendium of Geography and Travel. Malaysia and Pacific Archipelagoes: F. H. Guillemard, 439 †
Malling, West, and Maidstone, Solution-subsidence Valleys and Swallow-holes within Hythe Beds area of: F. J. Bennett, 277 *
Mallock, A., Note on ascent of meteorological balloons and temperature of upper air, 442 †
Man (*see also* Anthropogeography)—
Rise of Man: C. R. Conder, 210 †
Manchester, Port of, Influence of a Great Canal: J. M'Farlane, 496 *, 629
Manchuria—
Excursion through districts . . . in Shentzin province of Southern Manchuria: J. C. Edelstein, 106 †

Manchuria—*continued.*
Voyage archéologique dans la Mandchouric et la Chine Septentrionale: E. Chavannes, 201 †
Mannering, G. E., Godley Glacier and Sealy Pass, New Zealand, 110 †
Manning, D. W., Trout-fishing in Cape Colony, 436 †
Mansfeld, —, Totensee bei Nosakpé (Eken-land), 108 †
Mansfield, G. R., Glacial and normal erosion in Montana and Wisconsin, 640 †
Mantze, Marches of the: J. H. Edgar, 176 §, 201 †
Maple Leaf, Land of the: B. Stewart, 177 §
Maps (*see also* Cartography)—
Cartographical work of Tomas Lopez, 313
Comprehensive maps and models of the globe for special meteorological studies: C. Abbe, 208 †
International Geographical Congress, Resolutions with regard to map of World on Scale of 1:1,000,000..373
Necessity and utility of maps, 391
Unconventional Map of the World: R. D. Oldham, 377 *
Maps, New—
Africa, 117, 214, 325, 446, 547, 645
America, 118, 215, 325, 446, 547, 645
Asia, 117, 214, 324, 445, 546, 644
Australasia and Pacific Islands, 118, 447
Europe, 116, 212, 323, 444, 545, 643
General, 119, 326, 647
Marcel, G, Géographe Thomas Lopez et son œuvre, 115 †, 312 §
Marchi, L. de (*see also* Magrini, G. P.), Marea nel Mediterraneo, 105 †; Teoria elastica dell' isostasi terrestre, 112 †
Margerie, E. de, Carte géologique internationale de l'Amerique du Nord, 108 †
Marine deposits: *see under* Oceanography
Marinelli, O. (*see* Dainelli, G.), Moderno sviluppo della geografia fisica e della morfologia terrestre, 442 †
Maritsa river, Balkan peninsula, 219
Markham, Sir C., Inaugural address to Leeds and Yorkshire Geographical Society, 536; Sixteenth International Congress of Americanists at Vienna, 1908..376 *
Mars—
Mars und Erde: E. P. Merian, 442 †
Marsh, M. C.: *see* Parker, H. N.
Marshall, P., Vicinity of Lake Te Anan and Milford Sound, New Zealand, 353 *, 629
Mart, F., River Massan, 636 †
Martelli, A., Di alcune recenti idee sulla struttura dell' Appennino, 435 †
Martin, A. G. P., Oasis Sahariennes, 204 †, 612 §
Martino, G. de, Cirene e Cartagine, 320 † 419 §
Martonne, E. de, Développement et l'avenir de la géographie, 444 †; Note préliminaire sur le vent d'autan, 105 †; Recherches sur l'évolution morphologique des Alpes de Transylvanie, 104 †, 424 §
Massachusetts—
Population, density of, 382
Massan River: F. Mart, 636 †
Masterman, G. W. G., Notes of a visit to Engedy, Masada, and Jebel Usdum, 540 †
Mauche, A.: *see* Gennevaux, M.
Maunsell, F. R., Hejaz Railway, 570 *; remarks on "Problems in Exploration," 566
Maurer, J., Wärmeabnahme mit der Höhe in den Schweizer Alpen, 423 §, 441 †
Mazar-tagh, ancient remains at, 352
Mbam river, Kamerun, 308
540 †
Mecklenburg-Schwerin, Duke of, Expedition, S. H. des Herzogs A. F. zu Mecklenburg-Schwerin, 306, 540 †; Zentral-afrikanische Expedition, 86, 203 †, 436 †
Mecquenem, R. de, Lac d'Ourmiah, 317 †
Medain-i-Salih, Arabia, 580
Medals and other Awards of R.G.S., Presentation of, 96
Mediterranean—
Marea nel Mediterraneo: L. de Marchi, 105 †
"Nostrum mare": G. Grasso, 104 †
Rise of sea-level, A. Gnirs on, 91
Rythme des pluies dans la Mediterranée occidentale: M. Sorre, 316 †
Winter resorts; complete and practical handbook, etc.: E. Reynolds-Ball, 199 †, 302 §
Meisenheimer, J., on Pteropoda of the Antarctic, 34
Meitheis, The: T. C. Hodson, 539 †
Mejia, M. R., Geografia universal segun el procedimiento ciclico, 643 †
Mekeo people, British New Guinea, 274
Merchier, A., Le plateau de l'Iran, 637 †
Mer de Glace, Diminution of, J. Vallot's observations, 303
Merian, E. P., Mars und Erde, 442 †
Merrill, G. P., Meteor crater of canyon Diablo, Arizona, 542 †
Merwin, H. E., Some late Wisconsin and Post-Wisconsin shore-lines of North-West Vermont, 542 †
Meteorology, [Air, Rainfall]—
Contre-alizé: B. Brunhes, 112 †
Fesselballonaufstiege für meteorologische Höhenforschung an Bord S.M.S. *Planet*: Schlenzka, 113 †
Grossstädte auf die Luftfeuchtigkeit, Einfluss der: V. Kremser, 441 †, 536 §
Luftdruckverhältnisse in der Niederung und ihr Zusammenhang mit der Verteilung der Temperatur: W. Trabert, 322 †

Meteorology [Air, Rainfall]—*continued.*
Meteorological balloons and temperature of upper air, Note on ascent of: A. Mallock, 442 †
Meteorologischen Theorien des griechischen Altertums: O. Gilbert, 209 †
Observer's Handbook: R. H. Scott, 441 †
Revision der zonaren Niederschlagsverteilung: F. v. Kerner, 112 †
Variations de longue durée de divers phénomènes atmosphériques: H. Arctowski, 112 †
Verteilung des Luftdrucks über den Ozeanen: O. Baschin, 112 †
Meunier, A., Carte du Dahomey, 645 †
Mexico—
Civilización prehistórica de las Riberas del Papaloapam y Costa de Sotavento: L. Batres, 542 †
Exploraciones y consolidación de los monumentos arqueológicos de Teotihuacan: L. Batres, 542 †
Growth and decay of Mexican plateau: R. T. Hill, 320 †
Letters of Cortes: F. A. MacNutt, 320 †
Mexico, das Land der blühenden Agave einst und jetzt: J. Lauterer, 205 †
Mexikanische Hochgipfel: C. A. Purpus, 108 †
Primeras relaciones entre Mexico y el Japon: Z. Nuttall, 642 †
Reparación y consolidación del Edificio ne las Columnas en Mitla: L. Batres, 542 †
Wirtschaftsgeographie von Mexico: K. Sapper, 205 †
Meyer, H. (*see also* Hauthal, R.), In the High Andes of Ecuador, 206 †
Miaotse tribe, Sechuan, 183
Michaelsen, W., on geographical conditions of sub-Antarctic islands, 34
Michel, G., Contribution à l'étude des cours d'eau du plateau fribourgeois, 199 †
Middlemiss, C. S., Two Calcutta Earthquakes of 1906..637 †
Migration—
Experiments on Bird migration by the "Vogelwarte," 627
Mikira, The: E. Stack and Sir C. Lyall, 539 †
Mikkelsen, E., Arctic expedition, 3
Milford Sound, N.Z., Vicinity of Te Anan Lake and: P. Marshall, 354 *
Mill, H. R., Easter snowstorm of 1908.. 315 †; Geographical distribution of rainfall in British Isles, 59 *, 316 †; Map studies of Rainfall, 539 †
Milne, J., Recent Earthquakes, 322 †
Miltoun, F., Castles and chateaux of Old Navarre and Basque Provinces, 314 †, 422 §
Minas Geraes—
Mining Industry (Consular Report), 89
Mines and Quarries; General Report and Statistics for 1905..114 †
Ming-oi ruins, Central Asia, 347
Miremont, Comte de, Practical coastal navigation, etc., 543 †
Mississippi valley—
Capacity for Population, 387
Mitchelstown Cave, County Tipperary: C. A. Hill, 512
Modena—
Provincio di Modena e Reggio, Di alcune salse delle: S. Govi, 636 †
Modikan district, Kurdistan, 566
Mohn, H., Neue Studien über das Hypsometer, 440 †
Moisel, M., Deutsch-Ostafrika (Maps), 645 †
Moisture, Accumulation and Storage of, in Soil of Rivers of the Plains: M. Oppokov, 626
Möller, J., Verwendung von Sterndistanzen zur Bestimmung der Sextantenfehler auf See, 112 †
Moluccas—
Rapport sur les Moluques: R. D. M. Verbeek, 317 †
Monaco, Prince of, remarks on receiving Patron's Medal, 196
Monckton, C. A. W., Journeys in British New Guinea, 266 *, 503 *
Mongolia—
Mongolia and Kham. Works of expedition of Imperial Russian Geographical Society: P. K. Kozloff, 201 †, 519 §
Mongols: a history: J. Curtin, 210 †
Montana—
Glacial and normal erosion in Montana and Wisconsin: G. R. Mansfield, 640 †
Montenegro—
Tropfsteinhöhle von Lipa in Montenegro: G. W. Gessmann, 105 †
Monterde, P. R., Voie romaine d'Antioche à Ptolemais, 638 †
Monti, V., Di alcune possibili relazione tra la s'smicità della Svizzera e quella dell' alta Italia, 102 †
Moor, Sir R., remarks on "Exploration in Southern Nigeria," 22
Moore, F., Passing of Morocco, 177 §, 203 †
Moore, S. Le M.: *see* Rendle, A. B.
Moore, W. A., remarks on "Balkan Geography and Balkan Railways," 238
Moore, W. C.: *see* Emerson, P.
Morbihan—
Gisements de mollusques comestibles des côtes de France; le Morbihan oriental: L. Joubin, 434 †
Moreno, Colombia, 344
Mori, A., Una carta nautica sconosciuta di Vincenzo di Demetrio Volcio, 642 †
Moritz, B., Ausflüge in der Arabia Petræa, 637 †
Mornet, —, Reconnaissance d'un tracé de voie ferrée de Brazzaville à l'Océan, 437 †
Morocco—
Maps: Carte du Maroc (Service Géo. de l'Armée), 446 †; Cartes de

Morocco—*continued.*
Reconnaissance du Maroc: N. Larras, 446†; Maroc: R. de Flotte de Roquevaire, 214†
Mission Louis Gentil au Maroc (1907).. 204†
Passing of Morocco: F. Moore, 177§, 203†
Ports du Maroc: A. H. Dyé, 541†
Voyage aux dernières citadelles de l'Islam: E. Richet, 204†
Morris, Sir W. G., and H. W. Gordon, Reports on Geodetic Survey of the Transvaal and Orange River Colony, 319†
Mortensen, T., Fra de dansk-Vestindiske Øer, 206†
Morvand, Forest Population in, 82
Moryson's Itinerary, 81§
Moselle—
Canalisation de la Moselle: P. Braun, 103†
Moselle, Sarre, Chiers: B. Auerbach, 635†
Mossman, R. C., South Orkneys in 1907 ..641†
Mougin, P., Altitude de la ligne des neiges et son relèvement actuel dans les Alpes de la Savoie, 197†
Moulin, A., Aventures des Marins Dieppois, 115†
Mountains—
Round-backed ridges in mountain districts: G. Götzinger, 431
Studien über Gebirgspässe: J. Sölch, 440†
Mountain Passes, Classification of: Dr. Solch, 626
Mountain summits—
Visibility of Mountain Summits at Great Distances: P. Girardin, 625
Mü-chu, Tibet, 586
Muff, H. B., Report relating to geology of East Africa Protectorate, 107†
Mühlhofer, F., Lindner-Timavo und seine Bedeutung für das Studium der Karsthydrographie, 635†
Muir, J., Hetch-Hetchy Valley, 321†
Müller, J., Nürnberger Reichswald, 103†
Mulock, G. F. A., National Antarctic Expedition, 1901–1904. Charts, 439†; remarks on receiving Back Bequest, 97
Mumm, A. L., In and about Kashmir, 637†
Munster, Seb., Verschollene Karte von Deutschland von 1525: A. Wolkenhauer, 424§, 435†
Murchison Falls, Photographs of: C. R. Hall, 216†
Murdoch, W. G. B., From Edinburgh to India and Burmah, 316†
Murosoka hills, Uganda Protectorate, 86
Musil, A., Expedition in Northern Arabia, 528
Muskat to Mecca, Route from, 565
Mustagh, Ice-bound Heights of the: W. H. and F. B. Workman, 71§
Muzur Dagh, Kurdistan, 558
Myres, J. L. (*see also* Church, C. M.), Geographical Study of Mediterranean Man, etc., 509; remarks on "Problems in Exploration," 567

N.

Namaland—
Aus Namaland und Kalahari: L. Schultze, 319†
Namau people, British New Guinea, 273
Namlagira volcano, Central Africa, 86
Nam Ping and Nam Hsim Rivers, Shan States, 84
Nanga Parbat, Mt. Himalaya, 416
Nathorst, A. G., Emanuel Swedenborg as a geologist, 211†; Konung Oscar II. och den geografiska forskningen, 115†
Nations—
Growth of modern nations: H. de Tourville, 210†
Natural regions—
Geographische Enteilung der Erdoberfläche: A. Hettner, 322†
Naturalist, Three Voyages of a: M. I. Nicoll, 81§
Navarre—
Castles and Chateaux of Old Navarre and the Basque Provinces: F. Miltoun, 314†, 422§
Navigation—
Practical coastal navigation, etc., Comte de Miremont, 543†
Self-instruction in practice and theory of navigation: Earl of Dunraven, 208†
Ndellé, French Central Africa, 74
Neger, F. W., Untergegangene Pflanzenwelt der Antarktis, 439†
Négris, P., Délos et la transgression actuelle des mers, 104†
Nejd district, Arabia, 551
Nepal—
Étude historique d'un royaume hindou: S. Lévi, 317†
Neumann, L., Länder- und Staatenkunde von Europa, 538†
Nevada—
Evaporation at Reno, Studies on rate of: H. Bigelow, 108†
Trucker-Carson Project: O. C. S. Carter, 109†
Neve, A., Letter from, on Bhot-Kol Glacier, Nun Kun Mountains, 631
New Brunswick—
Natural history and physiography of: W. F. Ganong, 205†
Newcomb, S., A search for fluctuations in sun's thermal radiation through their influence on terrestrial temperature, 113†
Newfoundland—
Survey from Green Bay to Bonne Bay, Note on: H. C. Thomson, 157*
New Guinea, British—
Central Part of Southern Coast of Papua, Notes on: W. M. Strong, 270*

New Guinea, British—*continued.*
Explorations, Recent, in British New Guinea. Journeys of Messrs. Barton, Strong, and Monckton, 266 *
Journey across New Guinea: C. A. W. Monckton, 503 *
New Guinea, Dutch—
Arbeid van het exploratie-detachement in Zuid-Nieuw-Guinea: R. L. Hellwig, 439 †
Bensbach-rivier of Torasi, de grensrivier van Zuid Nieuw-Guinea: K. M. van Weel, 207 †
Is de Suopi aan Nieuw-Guinea's noordwestkust soms de bovenloop der Sebjar, die uitmondt in de Maccluergolf? A. Tissot von Palot, 110 †
Javaansche naam "Seran" van z. w. Nieuw-Guinea vóór 1545: G. P. Rouffaer, 207 †
Lorentz-expeditie naar centraal Ned. Nieuw-Guinea: G. P. Rouffaer, 110 †
Nordwest Neu-Guinea, Reisen in: H. Hirschi, 641 †
Zoological Collecting trip to: T. Barbour, 641 †
Zuidwest Nieuw-Guinea-Expeditie, 1904–5..543 †
New Guinea, German—
Ethnologika aus Neu-Guinea, Einige bemerkenswerte: R. Pöch, 110 †
Kaiser Wilhelmsland, Reisen an der Nordküste von: R. Pöch, 110 †
New Jersey—
Geographical influences in development of New Jersey: R. H. Whitbeck, 321 †
Life-areas of Southern New Jersey: W. Stone, 321 †
Population, Density of, 382
New Mecklenburg—
Expedition under Drs. Sapper and Friederici, 624
New Mexico—
Antiquities of upper Gila and Salt river Valleys in Arizona and New Mexico: W. Hough, 542 †
New South Wales—
Geology of Hunter River Coal-measures: T. W. E. David, 110 †
New Zealand—
Census, 1906, Results, 641 †
Douglas Glacier and its Neighbourhood, J. M. Bell, 121 *
Geological Survey, Annual Report, 189
Geology of Coromandel subdivision, Hauraki: C. Fraser and J. H. Adams, 110 †
Godley Glacier and Scaly Pass: G. E. Mannering, 110 †
Southern Islands expedition: L. Cockayne and D. Smith, 310 §, 439 †
Stanford's Compendium of Geography and Travel. Australia and New Zealand: J. W. Gregory, 78 §
Te Anan Lake and Milford Sound, Vicinity of: P. Marshall, 353 *
Ngangon-tso, Tibet, 589
Niagara—
Falls of Niagara, Evolution, etc.: J. W. Spencer, 420 §
Niari river—
Étude géologique et minière du bassin du Niari: J.-M. Bel, 437 †
Nicoll, M. I., Three Voyages of a Naturalist, 81 §
Niéger, J., Du Touat à Taodenni, 204 †
Nielsen, J. N., Contribution to hydrography of North-Eastern part of Atlantic Ocean, 113 †
Nien-chen-tang-la range, Tibet, 586
Niermayer, J. F., Dapper en Montanus, 114 †
Nieuwenhuis, A. W., Quer durch Borneo, 517 §
Nieves penitentes—
Formation of, 312
Nieves Penitentes in Himalaya: W. H. Workman, 436 †
Nigeria—
Boundary between Nigeria and Kamerun, 531
English-Okpoto vocabulary: F. F. W. Byng-Hall, 541 †
Forschungsreise in das Niger-Gebiet: L. Frobenius, 541 †
Fulani language, Short vocabulary of: E. A. Brackenbury, 541 †
Gbari grammar notes and vocabulary: W. P. Low, 541 †
Jukon language, Vocabulary of: W. K. Fraser, 541 †
Northern—
Boundary between Northern Nigeria and French Sahara, 531
Reports on results of Mineral Survey, 1904–1906 (Colonial Reports): W. R. Dunstan, 204 †, 308 §
Topographical Surveys in, 397
Southern—
Country between Niger and Cross rivers, 12
Efik and Ekoi tribes of Southern Nigeria, Note on: J. Parkinson, 318 †
Explorations in Southern Nigeria: E. A. Steel, 6 *
Forest administration, Report for 1906 (Colonial Reports), 541 †
Juju oracle in, letter from D. MacAlister on, 195
Lagos province: J. Parkinson, 541 †
Maps: Western Province of Colony and Protectorate of Southern Nigeria (Survey Dept., Lagos), 214 †
Report for 1906 (Colonial Reports), 204 †
Nigmann, E., Die Wahehe, 318 †
Nile—
Cataracts of, 461, 462
First or Aswan Cataract of the Nile: J. Ball, 165 §
Geographical Aspects of the Nile, Some: H. G. Lyons, 449 *

Nile—*continued.*
Levelling between Nile and Congo basins, 493 *
Longitudinal Section of River Nile: H. G. Lyons, 511
Maps: Orographical map of Nile Basin (Survey Dept., Cairo), 645 †
Unsolved problems of Nile Basin: H. G. Lyons, 318 †
Volume of water discharged by Nile, 454
Westernmost Feeders of Nile, letter from D. Comyn on, 95
White Nile and the cotton crop: Sir W. Willcocks, 107 †; White Nile, Volume of water of, 454
Niolo river, Corsica, Physiography of: P. Castelnau, 179
Nippoldt, A., Bemerkungen zu neuen Karten des Feldes der täglichen Variation des Erdmagnetismus, 322 †
Nokoué, Lac: R. Gaillard, 203 †
Nome, Alaska, Growth of, 187
Nordboernes faerder til Nordersøen: G. Isachsen, 115 †
Nordenskjöld, O., Ueber die Natur der Polarländer, 111 †; Wissenschaftliche Ergebnisse der Schwedischen Südpolar-Expedition, 1901–1903..207 †
Norrland, Till frågan om de norrländska älfvarnas vattenhushållning: A. G. Högbom, 538 †
Northern Grampian mountains, Prince Charles Foreland, 146
North Sea—
Physical characteristics, tides, etc.: W. H. Wheeler, 209 †
Strategical position in North Sea: Sir C. Campbell, 636 †
Stündliche Anderungen der hydrographischen und biologischen Verhältnisse auf der Reede von Ostende: W. Brennecke, 209 †
North-West Passage: R. Amundsen, 171 §
Norway—
Atlantic animals and plants of Western Norway, Origin of the so-called: L. Stejneger, 105 †
Maps: Kystkarter. (Norges Geografiske Opmaaling), 120 †, 648 †: Topografisk kart over kongeriget Norge, 117 †, 644 †
Rückzugsmoränen in Norwegen: F. Machaček, 314 †
Nova Scotia, Farm-cottage, camp, and canoe in maritime Canada: A. P. Silver, 205 †
Nubia, Survey, Note on present: T. D. Scott, 437 †
Nunchia, Colombia, 344
Nurenberg—
Nürnberger Reichswald: J. Müller, 103 †
Nuttall, Z., Primeras relaciones entre Mexico y el Japon, 642 †
Nyasaland Protectorate—
Report on results of mineral survey: W. R. Dunstan, 186 §, 204 †

O.

Oberhummer, E., Geography of Great Towns, 368; Stadtplan, seine Entwickelung und geographische Bedeutung, 114 †
Obituary for Year 1907–1908..94
Obrucheff, V. A., Expedition to Jair, Semista and Urkashar, 106 †; Reise im Djair, Urkaschar und Ssemisstai im Sommer 1906..201 †
Oceania: *see* Pacific Islands
Oceanography—
Dépôts marins: L. W. Collet, 209 †
Expedition, under R. Lütgens, for study of evaporation, 536
Hafsvattnets kemiska beståndsdelar: O. Pettersson, 209 †
Handbuch der Ozeanographie: O. Krümmel, 300 §
International ocean research, some results of: J. Hjort, 113 †
Ozeanischen Salzablagerungen, Untersuchungen über die Bildung der: J. H. van't Hoff, 322 †
Ozeanographische Arbeiten S.M.S. *Planet*: W. Brennecke, 209 †
Ozeanographische Versuche und Beobachtungen: P. Perlewitz, 113 †
Terminologia dei fondi oceanici: G. Ricchieri, 209 †, 442 †
Troughs: Geographische Lage der abyssischen Gräben: T. Arldt, 322 †
Ochrida lake, Balkan peninsula, 220, 221
Oestreich, K., Die Phlegräischen Felder, 199 †; Studien über die Oberflächengestalt des Rheinischen Schiefergebirges, 435 †
Offham, Swallow-holes at, Kent, 284
Oguta country, Natives of, 17
Ohio—
Ancient finger lakes in Ohio: G. D. Hubbard, 321 †
Oka tribe, Nigeria, 15
Oklahoma—
Population of Oklahoma and Indian Territory, 1907..109 †
Olbricht, K., Lüneburger Heide, 104 †
Oldham, R. D., Unconventional Map of the World, 377 *
Ollone, H. d', De Yun-nan-sen à Tch'eng-tou, 637 †; Mission d'Ollone, 183 §, 436 †, 529; Rapport du Lieut. de Fleurelle, 201 †
Oltu river, Rumania, 425
Olufsen, O., Indtryk fra mine Rejser i Terekdistriktet og Nordkaukasus, 105 †
Omei mount, China, 165
Omori, F., On Annual Variation of Height of Sea-level along Japanese Coasts, 540 †
Ona tribe, Patagonia, 592
Ontario—
Mines, Department of, Report on portion of North-Western Ontario traversed by National Transcontinental Railway: W. H. Collins, 437 †

Ophir nach den neuesten Forschungen: C. Peters, 443 †
Opobo river, Nigeria, 11
Oppokov, M., Accumulation and storage of moisture in soil of rivers of the plains, 626
Orange River Colony, Topographical Survey, 396
Ordnance Survey Maps of England and Wales, 116 †, 212 †, 323 †, 444 †, 545 †, 644 †
Oregon—
Pioneer days of Oregon history: S. A. Clarke, 206 †
Orel—
Viatiches of the Orel Government: P. I. Jacobi, 315 †
Orih or Oirh valley: Western China, 620
Ormuz—
Inscripção portugueza em Ormuz: F. Jardim, 637 †
Oscar II. och den geografiska forskningen: A. G. Nathorst, 115 †
Ostenfeld, C. H., Land Vegetation of the Færoes, 303
Otway and Skyring Waters, Survey of, 485
Oviedo, G. de, Narrative of vice-regal embassy to Vilcabamba, 1571. Translated by Sir C. Markham, 206 †
Owen Stanley range, British New Guinea, 271
Owens, J. S., and G. O. Case, Coast erosion and foreshore protection, 208 †
Oxford—
Geology of country around Oxford: T. I. Pocock, 315 †

P.

Pacific islands—
Dreissig Jahre in der Südsee: R. Parkinson, 77 §
Partage de l'Océanie: H. Russier, 543 †
Reisen im Vulkangebiete Oceaniens: O. Vojnich, 110 †
Pacific ocean—
Expedition to the Pacific under direction of G. Thilenius, 91
French Voyages, Early: E. W. Dahlgren, 430
Gräben im stillen Ozean: P. Perlewitz, 442 †
Maps: Pilot Chart of North Pacific Ocean (U.S. Hydrographic Office), 120 †, 215 †, 327 †, 448 †, 548 †, 648 †
Pacific Scientific Institution, Address: W. A. Bryan, 207 †
Voyages françaises à destination de la Mer du Sud avant Bougainville (1695–1749): E. W. Dahlgren, 110 †, 430 §
Western, German research in, 624
Palacký, J., obituary, 193
Paldus, J., Grundlegung der Herrschaft Schwarzenberg in Sachsen 1555..104 †
Palestine—
Bibliographie der Palästina-Literatur, Systematische: P. Thomsen, 638 †
Engedy, Masada, and Jebal Usdum, Notes of a Visit to: G. W. G. Masterman, 540 †
Palma—
Caldera von La Palma: C. Gagel, 203 †
Pamirs—
Mountain panoramas from the Pamirs and Kwen Lun: A. Stein, 316 †
Panama—
Mosquito Fauna of Panama, Report on: A. Busck, 639 †
Panorama drawing from nature and from maps: P. E. Lewis, 208 †
Papua (British New Guinea), Notes on Central Part of Coast of: W. M. Strong, 270 *
Paraná river—
Exploración arqueológica al delta del Paraná, y sur de Entre Rios, Informe sobre la: L. M. Torres, 109 †
Parga—
Versuch einer Geschichte von Parga: (Archduke Ludwig Salvator), 539 †
Parker, H. N., and others, Potomac river-basin, 109 †
Parkinson, J., Note on Efik and Ekoi tribes of South Nigeria, 318 †; Note on petrology and physiography of Western Liberia, 541 †; remarks on "Exploration in Southern Nigeria," 24; Southern Nigeria. Lagos province, 541 †
Parkinson, R., Dreissig Jahre in der Südsee, 77 §
Passarge, S., Buschmänner der Kalahari, 167 §; Gliederung Afrika's nach physikalischen und wirtschaftlichen Gesichtspunkten, 325 †; Südafrika; Eine Landes, Volks- und Wirtschaftskunde, 75 §; Tektonik der südafrikanischen Küsten, 639 †
Passes—
Classification of mountain passes: Dr. Solch, 626
Patagonian channels between the Straits and Gulf of Peñas, Explorations in the: C. Skottsberg, 591
Palot, A. T. van, Is de Snopi aan Nieuw-Guinea's noordwestkust soms de bovenloop der Sêbjar, die uitmondt in de Maccluer-golf? 110 †
Patot, J. W. T. van, Een viertal tochten door het eiland Têrangan, 110 †
Patterson, J. H., Man-eaters of Tsavo, 318 †
Patterson, J. N., Magic mountain, 639 †
Peary, R. E., New Arctic Expedition, 189
Pechuël-Loesche, E.: *see* Güssfeldt, P.
Peel river and Tributaries, Report on: C. Camsell, 437 †
Peking—
From Peking to Mandalay: R. F. Johnston, 164 §, 201 †
From Pekin to Sikkim: Count de Lesdain, 201 †, 295 §
Population of, 620

Pelée—
Eruption of Pelée: A. Heilprin, 438 †
Pelliot, P., La Mission, 201 †; Notre mission in Asie centrale, 637 †
Penck, A., Drakensberg und der Quathlambabruch, 319 †; on limit of perpetual snow in the Alps, 366
Pendulationstheorie: H. Simroth, 544 †; Bemerkungen zu Simroth's Pendulationstheorie: O. Maas, 441 †
Penguins of the Antarctic, E. A. Wilson's researches, 28
Pennsylvania—
State works of Pennsylvania: A. L. Bishop, 640 †
Peoples—
World's Peoples: A. H. Keane, 421 §
Perlewitz, P., Gräben im stillen Ozean, 442 †; Oceanographie der nordeuropäischen Meere im Anschluss an Nansens "Northern Waters," 208 †; Ozeanographische Versuche und Beobachtungen, 113 †
Persia—
Persia, the Awakening East: W. P. Cresson, 317 †, 423 §
Photographs of Persia: A. C. Bailward, 216 †
Persian Gulf—
Maps: Persian Gulf and adjacent countries (Top. Section, General Staff), 546 †
Unknown parts of littoral districts, 555
Peru—
Eastern, R. R. Schuller's journey in, 533
Expedition to Peru and Bolivia, W. C. Farabee's, 533
Journey into region of Rio Inambari in Peru: L. C. Bernacchi, 511
Meteorology, Peruvian, Observations made at Arequipa station, 1892–1895: S. I. Bailey, 206 †
Peru; its former and present civilization, etc.: C. R. Enock, 438 †
Standard time adopted, 533
Vilcabamba, Narrative of vice-regal embassy to, 1571: G. de Oviedo, translated by Sir C. Markham, 206 †
Pessler, W., Hausty pengebiete im Deutschen Reiche, 618 §, 635 †
Petermanns Mitteilungen—
Inhaltsverzeichnis von Petermanns Geographischen Mitteilungen, 211 †
Peters, C., Ophir nach den neuesten Forschungen, 443 †
Petersen, C. S.: *see* Bjørnbo, A.
Petrie, W. M. F., First Circuit of Africa, and supposed record of it, 480 *
Pettersson, O., Om hafsvattnets kemiska bestandsdelar, 209 †; Strömstudier vid Östersjöns portar, 113 †
Peucker, K., Generalkarte von Bosnien und der Hercegowina nebst Dalmatien, 323 †
Pfeil, Count J. von, Zur Erwerbung von Deutsch-Ostafrika, 169 §
Philippi, E., Ueber Intrusionen und tektonischen Storungen, 641 †
Philippines—
Ethnologie der Inselkette zwischen Luzon und Formosa: O. Scheerer, 317 †
Maps: Philippine Islands: C. W. Hodgson, 325 †
Physiography of Philippine islands, Contribution to: H. G. Ferguson, 540 †
Philippson, A., Landeskunde des Europäischen Russlands nebst Finnland, 314 †
Phillimore, R. H., Surveys in Kengtung State, 84
Phillips, P. L., Filson's First Map of Kentucky, 646 †
Phlegræan Fields—
Bibliography of topographical and geological works: R. T. Günther, 198 †
Phlegräischen Felder: K. Oestreich, 199 †
Photographs—
Basutoland: C. French, 548 †
Borneo, British North, 215 †
Chih-li province: H. R. Davies and A. H. Hilton-Johnson, 327 †
China: H. Kirkhope, 328 †
Murchison Falls and Fola Rapids: C. R. Hall, 216 †
Persia: A. C. Bailward, 216 †
Photography—
Métrophotographie aérienne à l'aide de mon Auto-Panoramographe: R. Thiele, 208 †
Pick, R., Gajoland und seine Bewohner, 202 †
Pickering, W. H., Volcanoes of the Azores, 635 †
Pien-ma, Yunnan, 241
Pilcomayo—
Expedición al Pilcomayo, 1903: O. Asp, 640 †
River Pilcomayo from its Discharge into River Paraguay to Parallel 22° S.: G. Lange, 523 §
Pilkington, C., Fifty years of the Alpine Club, 115 †
Pillans, W. S., Notes on Sub-Antarctic Islands, 641 †
Piquet, G. A.: *see* Bartholomew, J. G.
Pisva pass, Colombian Andes, 345
Pitt, W., Coast Erosion and its prevention, 641 †
Pittmann, E. F., Problems of artesian water-supply of Australia, 438 †
Plants—
Plantes tropicales de grande culture: E. de Wildeman, 210 †
Platt, A. F. R., Origin of name of island of Elephantine, 437 †
Plunkett, G. T., remarks on "Balkan Geography and Balkan Railways," 238
Po—
Delta del Po, Sulle recenti transformazioni del: M. Baratta, 104 †

Pobeguin, E., Fleuve Sebou dans sa plaine d'alluvions, 204 †
Pöch, R., Einige bemerkenswerte Ethnologika aus Neu-Guinea, 110 †; Expedition in South Africa, 532; Reisen an der Nordküste von Kaiser Wilhelmsland, 110 †
Pocock, T. I. (*see also* Gibson, W.), Geology of country around Oxford, 315 †
Pokau or Nara people, British New Guinea, 274
Polar Regions—
Cambio de clima en las regiones polares: J. G. Sobral, 111 †
Natur der Polarländer: O. Nordenskjöld, 111 †
Poliloff, D., Sketch of work of hydrographical expedition to northern polar ocean, 113 †
Pollacchi, P., Échelles métriques des cartes géographiques, etc., 111 †; Lecture des cartes anglaises et des États-Unis, 440 †
Pombal, Marquez de, e o seu centenario: B. Aranha, 443 †
Pomerania—
Geologie von Pommern: W. Deecke, 163 §
Population—
Distribution of Population in United States: A. P. Brigham, 380 *
Distribution of population over Earth's surface, etc.: A. J. Voeikof, 114 †
Natürliche Vermehrung der Bevölkerung: A. Woeikow, 114 †
Problem der Volksdichte, Beiträge zum: R. Tronnier, 210 †
Pore, Colombia, 344
Porena, F., Questione su Flavio Gioia e la bussola al lume di nuovi documenti e di nuove allegazioni, 208 †
Poronai river, Sakhalin, 621
Porsild, M. P., Foreløbig Beretning om Rejseningen af den danske arktiske station, 111 †
Port Mackay, Discovery and settlement of: H. L. Roth, 207 †
Ports, Free: G. Blondel, 368
Portugal—
Catalogo illustrado das aves de Portugal: D. Carlos de Bragança, 199 †
Position determination—
Astronomische Ortsbestimmung im Ballon: A. E. Rambaldo, 440 †
Potomac river-basin: H. N. Parker and others, 109 †
Potonié, H., Ueber rezente allochthone Humusbildungen, 209 †
Potter, S. O. L., Chichilticalli, 639 †
Præneste—
Topography and municipal history of Præneste, Study of: R. van D. Magoffin, 636 †
Prati, A., Novo contributo geonomastico, bacino superiore del fiume Brenta, 104 †
Pretoria—
Maps: Pretoria and surrounding country (Top. Section, General Staff), 645 †
Preuss, K. T., Reise zu den Stämmen der westlichen Sierra Madre in Mexiko, 320 †
Prevost, E. W., Tidal wave or "bore" in the Severn, 106 †
Prince Charles Foreland, Exploration of, 1906–1907: W. S. Bruce, 139 *
Prinz, G., Reiseskizzen aus Centralasien, 106 †
Prothero, R. E., Pleasant land of France, 176 §, 198 †
Public Elementary Schools, Suggestions for consideration of teachers, etc., 115 †
Pueblo Indianer: F. Krause, 109 †
Purari river, British New Guinea, 271
Purpus, C. A., Mexikanische Hochgipfel, 108 †
Pycraft, W. P., report on penguins of the Antarctic, 28
Pygmies of Semliki forest, 490

Q.

Quantock Hills—
Geology of Quantock Hills and of Taunton and Bridgwater: W. A. Ussher, 316 †
Quebec—
Catalogue of maps of Quebec: B. H. Soulsby, 205 †
Queensland—
Great Barrier, Coral Reefs of the: C. Hedley and T. G. Taylor, 533 §, 641 †
Port Mackay, Discovery and Settlement of: H. Ling Roth, 207 †, 525 §
Quelle, O., Beiträge zur Kenntnis der spanischen Sierra Nevada, 435 †

R.

Rabot, C., Glaciation antarctique, 111 †
Race, Environment and: W. Ridgeway, 405 *
Rahir, E., Étude spéléogique des environs de Goyet et de Hotton (Belgique), 197 †
Rainfall—
British Isles, Geographical Distribution of Rainfall in: H. R. Mill, 59 *
Map studies of Rainfall: H. R. Mill, 539 †
Variations périodiques de longue durée du débit et dépôts atmosphériques dans les bassins fluviaux: E. Oppokov, 442 †
Rambaldo, A. E., Astronomische Ortsbestimmung im Ballon, 440 †; Luchtvaart ten dienste von het wetenschappelijk onderzoek in Ned.-Indië, 201 †
Rámny, Îles, Lâmery, . . . des géographes arabes, et Madagascar: G. Ferrand, 115 †
Ranfurly, Earl of, remarks on "Douglas Glacier and its Neighbourhood," 134

Ranke, E., Anthropologische Beobachtungen aus Zentralbrasilien, 110 †
Rasmussen, K., Expedition to Arctic America, 535
Ras Musundam, Persian gulf, 555
Ravenstein, E. G., Geographical work of, 432
Rawson, H. E., Southern Cyclonic Belt, 178 *
Rayleigh, Lord, On Dilational Stability of the Earth, 153
Reclus, O., France à vol d'oiseau, 198 †, 302 §
Red Sea—
Marine biology of Sudanese Red Sea, from collections made by C. Crossland, 113 †
Rees, J. D., The Real India, 176 §
Reeves, E. A., New Instruments for Travellers and Surveyors, 607
Reich, E., Atlas Antiquus, 119 †
Reichard, A. C., Deutschen Versuche mit gezeichneten Schollen, 322 †
Reiche, K., Vegetation der Erde. VIII. Grundzüge der Pflanzenverbreitung in Chile, 297 §
Reindl, J., Bayerns in historischer Zeit ausgerottete und ausgestorbene Tiere, 103 †
Reinhardt, L., Mensch zur Eiszeit in Europa, 198 †
Reiss, W., obituary, 630
Reitzenstein, Freiherr von, Längs der Ostgrenze von Kamerun, 320 †
Revelli, P., Il Lago di Co' di Lago (Devero; Ossola), 435 †
Rendle, A. B., and others, Account of Plants collected by A. G. F. Wollaston, 108 †
Reviews—
Abruzzi, In the: A. Macdonnell, 617
Africa. Südafrika: Eine Landes-, Volksund Wirtschaftskunde: S. Passarge, 75
African Nature Notes and Reminiscences: F. C. Selous, 512
Afrique Centrale Française: A. Chevalier, 73
Alaska. To the Top of the Continent: F. A. Cook, 614
Alps in Nature and History: W. A. B. Coolidge, 414
America. Niederschlagsverhältnisse von Südamerika: E. L. Voss, 76
Archhelenis und Archinotis: H. von Ihering, 169
Aswan Cataract of Nile: J. Ball, 165
Australia: W. H. Lang, 177
Australia and New Zealand. Stanford's Compendium of Geography and Travel: J. W. Gregory, 78
Bombay Secretariat, Selections from Travels and Journals in the: G. W. Forrest, 516
Borneo, Quer durch: A. W. Nieuwenhuis, 517
Reviews—*continued.*
British Empire, Mines and Minerals of: R. S. G. Stokes, 177
Buschmänner der Kalahari: S. Passarge, 167
Campers' Handbook: T. H. Holding, 303
Canada. Historical Geography of British Colonies: H. E. Egerton, 618
Canada, Maritime, Farm Cottage, Camp, and Canoe in: A. P. Silver, 177
Ceram. Het Eiland Seran en zijne Bewoners: F. J. P. Sachse, 519
Ceylon, Book of: H. W. Cave, 418
Ceylon; A Handbook for Resident and Traveller: J. C. Willis, 418
Ceylon, the Paradise of Adam: C. Corner, 81
Chile, Grundzüge der Pflanzenverbreitung in: K. Reiche, 297
China, Our First Ambassador to: H. H. Robbins, 176
China, Present-Day Conditions in: M. Broomhall, 176
Cirene e Cartagini: G. de Martino, 419
Coast Erosion, Royal Commission on, 413
Columbus and the New World of his Discovery: F. Young, 174
Congo State, its origin, rights, and duties: A. Castelein, 303
Deutsche Kolonialwirtschaft. Südwest Africa: P. Rohrbach, 522
Deutsch-Ostafrika, Zur Erwerbung von: J. Graf v. Pfeil, 169
Deutsche Südwestafrika, Elf Jahre Gouverneur in: T. Leutwein, 169
Egypt and Sudan, Guide to (Macmillan & Co.), 302
Egypt, Eastern Desert of, Preliminary Report on Geology: W. F. Hume, 72
Eritrea, Lettere dall': G. Dainelli, 523
Finland, Summer Tour in: P. Waineman, 617
Finland to St. Petersburg, Through: A. M. Scott, 422
France à Vol d'Oiseau: O. Reclus, 302
France, Pleasant Land of: R. E. Prothero, 176
Frontières de la côte d'Ivoire et de la côte d'Or et du Soudan: M. Delafosse, 296
Fynes Moryson's Itinerary, 81
Geography, Commercial: H. Gannett and others, 616
Geography through the Stereoscope: P. Emerson and W. C. Moore, 174
Geologie, Unterricht in: G. Steinmann, 616
Greece, the Archipelago, etc., Guide to (Macmillan & Co.), 302
Hausa Reading Book: L. Charlton, 303
Hertfordshire Maps: H. G. Fordham: 70
Himalaya mountains and Tibet, Sketch of Geography and Geology of: S. G. Burrard and H. H. Hayden, 416

Reviews—*continued.*
Hungary and the Hungarians: W. B. Forster Bovill, 617
India, The Real: J. D. Rees, 176
Indian Seas and North Indian Ocean, Meteorological Atlas of: W. L. Dallas, 300
Island in Vergangenheit und Gegenwart: P. Hermann, 164
Istrien, Halbinsel: N. Krebs, 293
Italy, Sunny Days in: E. Lathrop, 176
Journeys of Observation: T. A. Rickard, 303
Kontinente, Entwicklung der: T. Arldt, 173
Labrador, Woman's Way through Unknown: Mrs. L. Hubbard, 614
Land of the Maple Leaf: B. Stewart, 177
Land's End: W. H. Hudson, 422
Levant Company, Early History of the: M. Epstein, 423
Mantze, Marches of the: J. H. Edgar, 176
Mediterranean Winter Resorts: E. Reynolds-Ball, 302
Mongolia i Kam: P. K. Kozlof, 519
Morocco, Passing of: F. Moore, 177
Mustagh, Ice-bound Heights of the, W. H. and F. B. Workman, 71
Naturalist, Three Voyages of a: M. I. Nicoll, 81
Navarre, Old, Castles and Chateaux of: F. Miltoun, 422
Niagara, Falls of, their Evolution, etc.: J. W. Spencer, 420
North-West Passage: R. Amundsen, 171
Oasis Saharienne (Gourara-Touat-Tidikelt): A. G. Martin, 612
Ozeanographie, Handbuch der: O. Krümmel, 300
Pacific. Dreissig Jahre in der Südsee: R. Parkinson, 77
Pekin to Sikkim, From: Count de Lesdain, 295
Peking to Mandalay, From: R. F. Johnston, 164
Persia, the Awakening East: W. P. Cresson, 423
Pilcomayo river: G. Lange, 523
Polar Continent, In Search of a: A. H. Harrison, 615
Polar Seas, Log of the *Laura* in: B. F. Holmes, 177
Pommern, Geologie von: W. Deecke, 163
Port Mackay, Queensland, Discovery and Settlement of: H. L. Roth, 525
Rhine: its Valley and History: H. J. Mackinder, 611
Russia. Länderkunde von Europa: A. v. Krasnow, 294
Ruwenzori to Congo, From: H. F. R. Wollaston, 613
Savage Europe, Through: H. de Windt, 423
Reviews—*continued.*
Sinai, Topography and Geology of Peninsula of: W. F. Hume and T. Barron, 520
Skye, Rock climbing in: A. P. Abraham, 175
Stannaries. A Study of English Tin Miner: G. R. Lewis, 610
Suisse au XX^e^ Siècle: P. Clerget, 302
Tierra del Fuego, Birds of: R. Crawshay, 171
Turko-Egyptian boundary in Sinai peninsula, Report on Delimitation: E. B. H. Wade, 168
Washed by Four Seas: H. C. Woods, 617
Worlds in the Making: S. Arrhenius, 526
World's Peoples: A. H. Keane, 421
Ziegler Polar Expedition 1903–1905. Scientific Results: J. A. Fleming, 80
Reynolds, J. B., Regional Geography: Asia, 637 †
Reynolds-Ball, E., Mediterranean Winter Resorts, 199 †, 302 §
Rhine—
Oberflächengestalt des Rheinischen Schiefergebirges, Studien über die: K. Oestreich, 435 †
Rhine: its Valley and History: H. J. Mackinder, 611 §
Terrassen langs den rechter Rijnoever, beneden het zevengebergte: J. Lorié, 198 †
Rhode island—
Population, density of, 382
Rhodesia—
Map of Part of North-Western Rhodesia by C. W. Lynch, Note on, 597
Southern Rhodesian ruins in Victoria District, Notes on: J. H. Venning, 108 †
Rhone glacier, Snow Cone formation on: E. Brückner, 312
Ricard, F., Missions d'Afrique des Pères Blancs, 106 †
Ricchieri, G., Per la terminologia dei fondi oceanici, 209 †, 442 †
Rice, E., Forschungsreise des, in den Gebieten zwischen Guaviare und Caqueta-Yapurá: D. Koch-Grünberg, 438 †
Richard, J., Observations de température des eaux marines arctiques faites pendant les campagnes du yacht *Princesse Alice*, 111 †
Richard, L., Comprehensive Geography of Chinese Empire and Dependencies, 201 †
Richardson, L. F., Lines of flow of water in saturated soils, 441 †
Richardson, R., Illustrated pocket guide to Melrose, Abbotsford, etc., 200 †; New railway projects in Balkan peninsula, 197 †
Richardson, W., A mariner of England account of career of: S. Childers, 544 †

Richarz, F., Ueber Beobachtungen des kunstlichen Brockengespenstes, 113 †
Richet, E., Voyage aux dernières citadelles de l'Islam, 204 †
Richters, F., on microscopic fauna of Antarctic, 35
Rickard, T. A., Journeys of Observation, 303 §
Ridewood, W. G., on the *Cephalodiscus* of the Antarctic, 28
Ridgeway, W., Environment and Race, 405 *
Riedel, W., Einteilung des Odenwalds in orographische Gruppen, 435 †
Rietfontein area of Bechuanaland, 513
Rivers—
Accumulation and Storage of Moisture in Soil of Rivers of the Plains: M. Oppokov, 626
Allure rectiligne des rives dans les cours d'eau à méandres encaissés: P. Girardin, 441 †
Sounding Machine for rivers and small lakes: E. J. Garwood, 535
Windings of rivers: T. S. Ellis, 112 †
Roads—
King's Highway, nature . . . of roads and road systems: R. Ryves, 544 †
Robbins, H. H., Our First Ambassador to China, 176 §
Robertson, C., Modern geography and the Copernican hypothesis, 212 †
Rodríguez del Busto, A., América del sur: Altitudes y Canalización, 543 †
Rohrbach, P., Deutsche Kolonialwirtschaft. Südwest Africa, 522 §
Rollier, L.: see Buxtorf, A.
Roman road system, Geographical Element in the: O. Jauker, 82
Romer, E., Geschichte des Dniestrtales, 105 †
Romi Changu, West China, 620
Ronca, G., Dalle Antille alle Guiane e all' Amazzonia, 438 †
Roquevaire, R. de Flotte de: Maroc (Map), 214 †
Roro people, British New Guinea, 273
Rosales, J. M, Exploraciones de los hermanos Reyes en la hoya amazónica, 206 †
Rosenthal, E., Katalog der im Jahre 1904 registrierten seismischen Störungen, 114 †
Rosier, W., Proper Domain of Geography as a Branch of Education, 365
Ross heights, Prince Charles Foreland, 146
Roth, H. L., Discovery and Settlement of Port Mackay, Queensland, 207 †, 525 §
Rothaug, J. G., Karte der Umgebung von Wien, 116 †
Rotterdam—
Oorzaken van Rotterdam's opkomst en ontwikkeling: C. te Lintum, 435 †
Rouffaer, G. P., De Javaansche naam "Seran" van z. w. Nieuw-Guinea vóór 1545..207 †; Terugkeer en afloop der Lorentz-expeditie naar Centraal Ned. Nieuw-Guinea, 110 †
Royal Atlas of Modern Geography: W. & A. K. Johnston, 326 †
Royal Geographical Society—
Address to, 1908: Sir G. T. Goldie, 1 *
Anniversary Meeting, 1908..95
Entrance fees and subscriptions, amended bye-law, 100
Franco-British Exhibition diploma awarded to, 527
Livingstone, David, Gift to R.G.S. of Portrait of, 618
Medals and Other Awards, Presentation of, 96, 196
Meetings of, Session 1907-1908..95-101, 195
Special General Meeting, 100
Ruba el-Khali, Arabia, 550
Rubber—
Géographie du caoutchouc et son exploitation: E. de Wildeman, 114 †
Hevea Brasiliensis, or Para Rubber in Malay Peninsula: W. F. C. Asimont, 540 †
Plantation . . . of Parà Indian rubber (*Hevea Brasiliensis*): H. A. Wickham, 544 †
Rubenson, C. W., An Ascent of Kabru, 202 †
Rudolph, E, and E. Tams, Seismogramme des nordpazifischen und südamerikanischen Erdbebens, 1906..113 †
Russia—
Bevölkerung Russlands, Resultate des russischen Zensus und Zentrum der: A. Woeikow, 636 †
Höfe um Sonne und Mond in Russland: E. Leyst, 105 †
Länderkunde von Europa, Russland: A. v. Krassnow, 294 §
Landeskunde des Europäischen Russlands nebst Finnland: A. Philippson, 314 †
Military topographical section of General Staff, Memoirs of, 105 †
Pulkovo, La grande base de: A. S. Vassiliev, 105 †
Russia in Asia—
Débacle et congélation des eaux dans la Russie d'Asie: V. B. Sostakovič, 317 †
Russier, H., Partage de l'Océanie, 543 †
Ruthven, J. F., Theory of the tides, 322 †
Ruwenzori—
From Ruwenzori to Congo: A. F. R. Wollaston, 613 §, 638 †
Plants collected on Mount Ruwenzori by A. G. Wollaston, Account of: A. B. Rendle and others, 108 †
Snow-peaks of, 489
Ryder, C. H. D, Sven Hedin's Expedition in Tibet, 585
Ryves, R., King's Highway, nature . . . of roads and road systems, 544 †

S.

Sacerdote, A., Di una esplorazione compiuta sul fiume Luama affluente del Congo, 107 †
Sachse, F. J. P., Het Eiland Seran en sijne Bewoners, 519 §
Sahara—
Confins Sahariens; étude de géographie militaire: E. Arnaud et M. Cortier, 318 †
Constitution géologique de quelques points de la Mauritanie: J. Chautard et P. Lemoine, 319 †
Du Touat à Tadenni: J. Niéger, 204 †
Etudes sur le Sahara et le Soudan: R. Chudeau, 204 †
French: M. A. Cortier's Expedition, 531
Géographie et la géologie du Sahara, Etat actuel de nos connaissances sur la: C. Vélain, 108 †
Mission Arnaud—Cortier de l'une à l'autre rive du Sahara, 108 †
Missions au Sahara. Tome I. Sahara Algérien: E.-F. Gautier, 319 †
Oasis Sahariennes: A. G. Martin, 204 †, 612 §
St. Bernard—
Präzisionsnivellement auf den Grossen St. Bernhard: J. Hilfiker, 197 †
Saint Blaise—
Lac de Saint Blaise: histoire Hydrographie, etc., 200 †
St. Joseph river, British New Guinea, 271
St. Leonard's Park gorge, Kent, 280
Saint-Loup—
Recherches spéléologiques dans la région du Pic Saint-Loup: M. Gennevaux et A. Mauche, 434 †
St. Martin, V. de, et F. Schrader, Atlas Universel de Geographie, 326 †
St. Vincent—
Eruptions of Soufrière in 1902, and Visit to Mont Pelée in Martinique, Report on: T. Anderson, 640 †
Petrographical notes on products of eruptions of 1902 at the Soufrière: J. S. Flett, 640 †
Sakhalin—
Geology of Japanese Sakhalin, Preliminary Notes on: K. Jimbō, 620 §, 637 †
Salwin—
Exploration by Dr. Brunhuber, 529
Journey on Upper Salwin, October—December, 1905: G. Forrest, 239 *
Samoa—
Volcano of O Le Mauga Mu: G. Furlong, 511
San Carlos, Venezuela, 331
Sandler, C., Ein bayerischen Jesuitengeograph, 115 †
San Francisco bay—
Discovery of San Francisco Bay: G. Davidson, 109 †
Sangha—
De la Sanga au Logone: P. Lancrenon, 107 †
Exploration entre la Sangha et le Logone: P. Lancrenon, 107 †
San Raphael in Zamora, Venezuela, 333
São Paulo—
Commissão geographica e geologica do Estado de S. Paulo: J. P. Cardoso, 110 †
Maps: Carta Geral do Estado de S. Paulo, 646 †; Carta Topographica do Estado de S. Paulo, 646 †
São Thomé—
S. Thomé: E. de Campos, 638 †
Sapper, K., Wirtschaftsgeographie von Mexico, 205 †
Sapper, Dr., Scientific research in New Mecklenburg and the Solomon group, 624
Sarasin, P. und F., Versuch einer Anthropologie der Insel Celebes, 202 †
Sardinia—
Nuorese, Das, Ein Reisebild aus Sardinien: M. L. Wagner, 199 †
Saskatchewan river—
Sources of Saskatchewan and Athabasca Rivers, Among the: M. T. Schäffer, 205 †
Sat Dagh, Mount, Kurdistan, 557
Saxony—
Grundlegung der Herrschaft Schwarzenberg in Sachsen 1555: J. Paldus, 104 †
Scandinavia—
Great Scandinavian overthrust: J. W. Gregory, 105 †
Schaffer, F. X., Neue Forschungen in den alten Terrassen des Donaugebietes, 198 †
Schäffer, M. T. S., Among the sources of Saskatchewan and Athabasca rivers, 205 †
Scheerer, O., Zur Ethnologie der Inselkette zwischen Luzon und Formosa, 317 †
Scherer, H., Ein bayerischer Jesuitengeograph: C. Sandler, 115 †
Scherzer, K. R. von, Eine biographische Skizze, 115 †
Schiffner, V., on Mosses of Antarctic, 33
Schlüter, O., Verhältnis von Natur und Mensch in der Anthropogeographie, 114 †
Schmidt, C., Bild und Bau der Schweizer Alpen, 102 †
Schott, G., Salzgehalt und Dichte der Meeresoberfläche in den westindischen Gewässern, 113 †
Schrader, F., Année Cartographique, 647 †; and L. Gallouédec, Atlas Clásicode Geografía Moderna, 326 †; and V. de St. Martin, Atlas Universal de Geographie, 326 †
Schröter, C., St. Antönierthal im Prättigau in seinen wirtschaftlichen und pflanzengeographischen Verhältnisse, 315 †

Schubert, J., Landsee und Wald als Klimatische Faktoren, 112 †
Schuller, R. R., Journey in Eastern Peru, 533
Schultze, L., Aus Namaland und Kalahari, 319 †
Schuster, A., Diurnal variation of terrestrial magnetism, 642 †
Schwender, J., Der Steigerwald, 198 †, 304 §
Scotland—
Illustrated pocket guide to Melrose, Abbotsford, etc.: R. Richardson, 200 †
Rainfall, Geographical distribution of, 60
Scott, A. M., Through Finland to St. Petersburg, 314 §, 422 †
Scott, E. J., Wade's Method of Determining Longitude, 65 *
Scott, R. F., Award of Berlin Geographical Society to, 191
Scott, R. H., Meteorological Observer's Handbook, 441 †
Scott, T. D., Note on present Nubian Survey, 437 †
Scott, W. B., Introduction to geology, 544 †
Scottsberg, C.: *see under* Skottsberg, C.
Sea Horse bay, Prince Charles Foreland, 149, 150
Sea-level—
Fortschritt einer säkularen Niveauschwankung des Meeres, Beobachtungen über den: A. Gnirs, 91 §, 322 †
Sebu—
Fleuve Sebou dans sa plaine d'alluvions: E. Pobeguin, 204 †
Se-chuan—
Geographie en geologie van het "Roode Bekken" in de provincie Se-tsjoean: E. C. Abendanon, 436 †
Journey in Western Se-chuan made by T. Smith, 619
Tribes of North-Western Se-chuan, W. N. Fergusson's journeys amongst, 594
Western, H. D'Ollone's and A. F. Legendre's journeys in, 183 ·
Yun-nan-sen à Tch'eng-tou, De: H. d'Ollone, 183 §, 637 †
See, T. J., New theory of earthquakes and mountain formation, etc., 321 †
Seiches—
Hauptseichesperioden der bis jetzt untersuchten Seen: A. Endrös, 441 †
Seidel, H., Robert Towson, ein Tatraforscher des 18 Jahrhunderts, 443 †
Seismology [*see also* Earthquakes]—
Fenomeni sismici e bradisismici, Contributo alla interpretazione elastica del: G. Costanzi, 322 †
Katalog der im Jahr 1904 registrierten seismischen Störungen: E. Rosenthal, 114 †
Recent Earthquakes: J. Milne, 322 †
Seismic radiations: C. G. Knott, 322 †
Seismogramme des nordpazifischen und südamerikanischen Erdbebens 1906: E. Rudolph und E. Tams, 113 †
Seligmann, C. G., Veddas of Ceylon, 512
Selkirk mts.—
Glaciers of the Canadian Rockies and Selkirks: W. H. Sherzer, 108 †
Selous, F. C., African Nature Notes and Reminiscences, 612 §
Selva, D., Edificación contra tremblores, 112 †
Semliki river, Central Africa, 489
Semple, E. C., Geographical location as a factor in history, 210 †; Oceans and enclosed seas, 442 †
Sergi, G., Di una classificazione razionale dei gruppi umani, 642 †
Servian Minister, H.E. the, remarks on "Balkan Geography and Balkan Railways," 237
Seton, E. T., Canoe trip to Plains of the Caribou, 275 *
Severn—
Tidal wave or "bore" in the Severn; E. W. Prevost, 106 †
Sextant—
Verwendung von Sterndistanzen zur Bestimmung der Sextantenfehler auf See: J. Möller, 112 †
Seychelles—
Resources of the Seychelles, Development of, 638 †
Shabluka gorge, Nile, 462
Shackleton, E. H., Antarctic Expedition, 2
Shakespeare and his knowledge of waterways of Northern Italy: Sir E. Sullivan, 619
Shawe, W., Philips' new map of England and Wales, showing Canals, etc., 213 †
Sheffield—
Geography, Lectureship in, 92
Shelford, F., remarks on "Exploration in Southern Nigeria," 23
Sherlock, R. L.: *see* Gibson, W.
Sherora, Jebel, Arabia, 579
Sherzer, W. H., Glaciers of Canadian Rockies and Selkirks, 108 †
Shiras, G., One season's game-bag with the camera, 437 †
Shirri island, Nile, 462
Shostakovich, V. B., Débacle et Congélation des eaux dans la Russie d'Asie, 317 †
Shuru-tso, Tibet, 587
Siam—
Maps: Carte de la Commission de Délimitation entre l'Indo-Chine et le Siam, 445 †; Muang Sritamarat, Muangs Patalung, and Sawngkla; Province of Pattani (R. Survey Dept., Bangkok), 546 †
Siberia—
Tungus tribes of Siberia, Account of: S. Patkanoff, 202 †
Sieger, R., Geographie der zeitweise bewohnten Siedlungen in den Alpen, 102 †
Sierra Leone—
Maps: Sierra Leone peninsula (Top. Section, General Staff), 645 †

Sierra Madre—
Reise zu den Stämmen der westlichen Sierra Madre in Mexiko: K. T. Preuss, 320 †
Sierra Nevada, Spain—
Beiträge zur Kenntnis der spanischen Sierra Nevada: O. Quelle, 435 †
Sierra Nevada, U.S.—
Lake Ramparts: G. K. Gilbert, 321 †
Sievers, W., Eine neue Karte von Venezuela, 438 †; Vergletscherung der Cordilleren des tropischen Südamerika, 206 †
Silver, A. P., Farm-cottage, camp, and canoe in maritime Canada, 177 §, 205 †
Simplon Tunnel—
Mesure des bases géodésiques et la mesure du Tunnel du Simplon en mars 1906: R. Gautier, 105 †
Simroth, H., Die Pendulationstheorie, 544 †; Simroth's Pendulationstheorie: O. Maas, 441 †
Sinai—
Delimitation of Turco-Egyptian boundary between Vilayet of the Hejaz and Peninsula of Sinai, Report: E. B. Wade, 168 §, 203 †
Topography and Geology of Peninsula of Sinai. South-Eastern Portion: W. F. Hume, 520 §; Ditto, Western Portion: T. Barron, 203 †, 520 §
Sjögren, O., Strandlinjer och issjöar vid Torneträsk, 538 †
Skattum, O. J., Verdensdelenes geografiske individualitet, 211 †
Skottsberg, C., on botanical collections of Swedish Antarctic expedition, 44; Swedish Magellanic Expedition, 1907–1909: Preliminary Reports, 485 *, 591 *
Skye—
Rock Climbing in Skye: A. P. Abraham, 175 §, 200 †
Skyring and Otway Waters, Survey of, 485
Smith, D.: *see* Cockayne, L.
Smith, E. A., on gastropods of Antarctic, 29
Smith, G. A., Jerusalem; topography, etc., from earliest times to A.D. 70..318 †
Smith, T., Journey in Western China, 619
Smith, T. A., Physical geography as an essential part of school geography, 643 †
Snares islands, Southern ocean, L. Cockayne's expedition to, 311
Snow—
Easter snowstorm of 1908: H. R. Mill and others, 315 †
Limit of perpetual snow in the Alps: A. Penck, 366
Snow forms—
Schneeschmelzkegel auf Island: H. Spethmann, 312 §, 322 †
Schneeschmelzkegel in den Alpen und Nieve Penitente: E. Brückner, 312 §, 322 †
Sobat river, Rainfall on, 459
Sobral, J. G., Cambio de clima en las regiones polares, 111 †
Socha, Colombia, 346
Solar radiation—
Search for fluctuations in sun's thermal radiation through their influence on terrestrial temperature; S. Newcomb, 113 †
Sölch, J., Studien über Gebirgspässe, 440 †, 626 §
Somaliland—
Frontiere tra l'Abissinia e la Somalia e Dancalia italiane: A. Blessich, 540 †
Soma-tsanpo, Tibet, 589
Somerville, B. T., Submerged plateau surrounding Ceylon: some considerations regarding the formation of the coastline, 427 §, 436 †
Sorre, M., Plaine du Bas-Languedoc, 103 †; Sur un rythme des pluies dans la Méditerranée occidentale, 316 †
Soufrière, Mount—
Eruptions of the Soufrière, 1902, Report on: T. Anderson, 206 †
Soulsby, B. H., Catalogue of maps of Quebec, 205 †
Sounding Machine for Rivers and Small Lakes: E. J. Garwood, 535
South Orkneys in 1907: R. C. Mossman, 641 †
South seas: *see* Pacific islands
South Trinidad island, Atlantic ocean, 81
South Victoria Land, geology of, 26
Southern Alps of New Zealand, 124
Southern Cyclonic Belt: H. E. Rawson, 178 *
Southern islands—
Sub-Antarctic Islands, Notes on: W. S. Pillans, 641 †
Spain—
Bassin supérieur du Rio Vero (Haut-Aragon, Espagne): L. Briet, 199 †
Gabinete Geográfico del Ministerio de Estado, 636 †
Refranes, modismos y cantares geográficos empleados en España, con relacion à otros pueblos: G. M. Vergara, 199 †
Spencer, J. W., Falls of Niagara, their Evolution, etc., 420 §
Spethmann, H., Dr. V. Knebels Island-expedition im Sommer 1907..435 †; Schneeschmelzkegel auf Island, 312 §, 322 †
Spicer, E. C., Chiltern valleys, 288 *
Spilbergen, Joris van, 1568–1620: A. Wichmann, 443 †
Spitsbergen—
Glaces autour de Spitsberg en 1907: G. Isachsen, 111 †
Isforholdene omkring Spitsbergen 1907: G. Isachsen, 111 †
Prince Charles Foreland, Exploration of, 1906–07: W. S. Bruce, 139 *
Spitsbergenekspeditionen, 1906: G. Isachsen, 111 †

Spitsbergen—*continued.*
Svenska grädmatnings expeditionens fysikaliska, meteorologiska och naturhistoriska arbeten: V. Carlheim-Gyllenskköld, 111 †
Swedish Expedition under Baron de Geer, 534
Sprigade, P., Karte von Togo, 446 †; Kartographie Togos, 541 †
Springs as a geographic influence in humid climates: F. Carney, 442 †
Stack, E., and Sir C. Lyall, The Mikirs, 539 †
Stanford's Compendium of Geography and Travel. Australia and New Zealand: J. W. Gregory, 78 §; Ditto, Malaysia and Pacific Archipelagoes: F. H. Guillemard, 439 †
Stanford's orographical map of Australasia: H. J. Mackinder, 118 †
Stannaries, a study of the English tin-miner: G. R. Lewis, 200 †, 610 §
Stanton, E. A., Provisional Map of Khartoum City, etc., 645 †
Steel, E. A., Exploration in Southern Nigeria, 6 *
Stefanini, G., Fenomeni carsici nel gessi della Val d'Era, 104 †
Stefansson, V., Expedition in Arctic America, 535; On the Mackenzie river, 205 †; Suitability of Eskimo methods of winter travelling in scientific exploration, 440 †
Steigerwald, Der: J. Schwender, 198 †, 304 §
Stein, Baron von, Erkundungs-Expedition zwischen Wuri und Sanaga, 307 §, 540 †
Stein, M. A., Expedition in Central Asia, 347, 598; Mountain panoramas from the Pamirs and Kwen Lun, 316 †
Steiner Alps—
Gletscherspuren in den Steiner Alpen: R. Lucerna, 102 †
Steiner, L., Earth-currents and magnetic Variations, 642 †
Steinmann, G., Unterricht in Geologie und verwandten Fächern auf Schule und Universität, 616 §
Stejneger, L., Origin of so-called Atlantic animals and plants of Western Norway, 105 †
Stephan, E., Death of, 534
Stereoscope—
Geography through the Stereoscope: P. Emerson and W. C Moore, 174 §
Stevenson, E. L., Canerio's Marine Chart of the World, 1502..647 †
Stewart, B., Land of the Maple Leaf, 177 §
Stewart, J. H. M. S., obituary, 195
Stokes, R. S. G., Mines and Minerals of British Empire, 177 §, 211 †
Stoll, O., Der Bischof Bartolomé de las Casas, eine Zeitgenosse des Columbus, 642 †
Stone, W., Life-areas of Southern New Jersey, 321 †
Strahan, A., remarks: "Douglas Glacier and its Neighbourhood," 135; "Formation of Valleys in Porous Strata," 291; "Some Geographical Aspects of the Nile," 477
Strong, W. M., Notes on Central Part of Southern Coast of Papua, 270 *
Struma river, Balkan peninsula, 219
Sudan—
Finances . . . of Egypt and Sudan in 1907, Reports, 437 †
Topographical Surveys in, 397
Suez Canal—
Navigation through Suez Canal, Statistical return of, 1906..203 †
Sullivan, Sir E., Shakespeare and his knowledge of Waterways of North Italy, 619
Sumatra—
Gajoland und seine Bewohner: R. Pick, 202 †
Sumpa Khan-po, Pag Sam Jon Zang, 435 †
Sundgau, Der: F. Tschaeche, 83 §, 198 †
Surveying—
Aid to land-surveying, etc.: J. C. Clancey, 440 †
Survey of inaccessible places by tacheometry: O. F. Cuffe, 112 †
Svalbard—
Om opdagelsen af Svalbard: G. Isachsen, 115 †
Swallow-holes, formation of, 277
Sweden—
Maps: Generalstabens Karta öfver Sverige (Generalstabens Litografiska Anstalt), 445 †; Swedish Maps: S. Lönborg, 213 †
Mesures de l'intensité de la radiation solaire faites à Upsala en 1901: J. Westman, 105 †
Postglaciala nivå-och Klimatförändringarna på norra delen af det smålandska höglandet: A. Gavelin, 105 †
Till kännedomen om Lagans och Nissans hydrografi: A. Wallén, 199 †
Timmertransporten på de svenska vattendragen och dess geografiska förutsättningar: G. Andersson, 181 §, 199 †
Utvecklingen af Sveriges zoologiska hafsstation Kristineberg: H. Théel, 538 †
Swedenborg, E., as a geologist: A. G. Nathorst, 211 †
Switzerland—
Astronomisch-geodätische Arbeiten in der Schweiz, 199 †
Énergie des cours d'eau en Suisse: J. Dalemont, 105 †
Flore de la Suisse et ses origines: H. Christ, 315 †
Hydrométriques suisses, Tableau graphiques des Observations, 636 †
St. Antönierthal im Prättigau in seinen wirtschaftlichen und pflanzen-

Switzerland—*continued.*
geographischen Verhältnisse: C. Schröter, 315 †
Suisse au XX^e siècle; étude économique et sociale: P. Clerget, 199 †, 302 §
Terrains et associations de plantes de la région de la Chaux-de-fonds: E. R. Tissot, 199 †
Vertical distribution of temperature in Swiss Alps: J. Maurer, 423
Wärmeabnahme mit der Höhe in den Schweizer Alpen: J. Maurer, 423 §, 441 †
Weissensteintunnels und seiner Umgebung, Geologische Beschreibung des: A. Buxtorf and others, 538 †
Syria—
Changes in, 556
Massif du Gabal Sim'an et les Yésidis de Syrie: P. H. Lammens, 628 †

T.

Ta-cha-dé, Yunnan, 249
Tafel, A., Vorläufiger Bericht über seine Studienreise in Nord-West China und Ost-Tibet, 436 †
Tallulah—
Drainage modifications in Tallulah district: D. W. Johnson, 109 †
Tana river, East Africa, Captain Aylmer's Journey in Country South of, 55 *
Tarash river, Uganda Protectorate, 86
Targo-gangri, Tibet, 587
Tasco, Colombia, 346
Ta-shueh-shan mountain, Se-chuan, 595
Tasmania—
Ben Lomond range, Colonel Legge's exploration of, 624
Tawarek—
Touareg du sud: A. Aymard, 319 †
Taylor, T. G.: *see* Hedley, C.
Te Anan Lake and Milford Sound, New Zealand, Vicinity of: P. Marshall, 353 *, 629
Tebuk, Oasis of, Arabia, 577, 579
Tegernsee—
Limnologische Studie: G. Breu, 103 †
Telkwa River and vicinity, B.C.: W. W. Leach, 437 †
Temperature—
Variation des amplitudes des marches diurnes de la température au sommet du Pike's Peak: H. Arctowski, 112 †
Variations de longue durée des amplitudes moyennes de la marche diurne de la température en Russie: H. Arctowski, 112 †
Wärmeabnahme mit der Höhe in den Schweizer Alpen: J. Maurer, 423 §, 441 †
Terenam lake, Tibet, 427
Terrestrial Magnetism—
Carnegie Institution of Washington, Department of terrestrial magnetism of, Annual Report: L. A. Bauer, 209 †
Diurnal variation: A. Schuster, 642 †
Terrestrial Magnetism—*continued.*
Earth-currents and magnetic variations: L. Steiner, 642 †
Karten des Feldes der täglichen Variation des Erdmagnetismus: A. Nippoldt, 322 †
Terrier, A., Délimitation franco-allemande du Cameroun, 639 †; Mission Moll; la délimitation du Cameroun, 108 †
Tessier, L. F., Déboisement et les inondations, 441 †
Thames—
Underground water supplies to Thames Basin, Some observations upon: C. Beadle, 539 †
Theal, G. McC., History of South Africa since September, 1795..541 †
Théel, H., Om utvecklingen af Sveriges zoologiska hafsstation Kristineberg, 538 †.
Thiele, R., Métrophotographie aérienne à l'aide de mon Auto-Panoramographe, 208 †
Thilenius, G., Expedition to the Pacific, 91
Thirring, G., József v. Körösy, 211 †
Thomas, P., Essai d'une description géologique de la Tunisie, 204 †
Thompson, H. S., Liste des phanérogrames et cryptogames vasculaires recueillis . . . dans les districts du Mont-Cenis, de la Savoire, etc., 102 †
Thomsen, P., Systematische Bibliographie der Palästina-literatur, 638 †
Thomson, H. C., Note on a Survey from Green Bay to Bonne Bay, Newfoundland, 157 *
Thomson, John, Honour to, 628
Thorbecke, F. (*see also* Hassert, K.), Expedition to Kamerun, 530
Thoulet, J., De l'influence du Vent dans le remplissage du lit de l'Océan, 642 †
Thua river, British East Africa, 58
Tian-shan—
Vergletscherung des Khan-Tengri-Massives und die Spuren einer diluvialen Eiszeit im Tiën-Schan: M. Friederichsen, 200 †
Tibet—
Discoveries in Tibet, My: S. Hedin, 426, 539 †
Expedition in Tibet, S. Hedin's; C. H. D. Ryder, 585
Expedition, Ueber einige Ergebnisse seiner: W. Filchner, 106 †
Geography and Geology of Himalaya Mountains and Tibet, Sketch of: S. G. Burrard, and H. H. Hayden, 416 §
Geology of provinces of Tsang and Ü, in Cental Tibet: H. H. Hayden, 201 †
Journeys in Tibet, Sven Hedin's map showing routes, Note on, 527
Lama revolt in, 182
Mountain range in Southern Tibet, 427
South-Eastern, J. Bacot's Journey in, 182

Tides—
Manual of tides: R. A. Harris, 322 †
Oceanic tides, Investigation of secondary undulations of, 442 †
Theory of the tides: J. F. Ruthven, 322 †
Tierra del Fuego—
Birds of: R. Crawshay, 171 §
Tiessen, E., Beobachtende Geographie und Länderkunde in ihrer neueren Entwickelung, 116 †
Tilin-Daik-Thein of Burma, 433
Tin—
Stannaries, A Study of English Tin Miner: G. R. Lewis, 200 †, 610 §
Tinaco falls, Venezuela, 331
Tissot, E. R., Terrains et associations de plantes de la région de la Chaux-de-fonds, 199 †
Tittmann, O. H., Alaska Boundary Demarcation, Report, 532; Progress of demarcation of Alaska boundary, 639 †
Tiva river, British East Africa, 55
Togo—
Boundary between Togo and Dahome, 531
Kartographie Togos: P. Sprigade, 541 †
Maps: Karte von Togo: P. Sprigade, 446 †
Steppes in, 430
Tongking—
Géographie tectonique du Haut-Tonkin: G. Zeil, 201 †
Montagnards au Tonkin: E. Diguet, 317 †
Railway from Tongking to Yunnan, 184
Topographical drawing, Text-book of: F. T. Daniels, 208 †
Tornea lake—
Strandlinjer och issjöar vid Torneträsk: O. Sjögren, 538 †
Torres, L. M., Informe sobre la exploración arqueológica al delta del Paraná, y sur de Entre Ríos, 109 †
Torres Straits—
Cambridge Anthropological Expedition to Torres Straits, Reports, 439 †
Touat—
Du Touat à Taodenni: J. Niéger, 204 †
Tourville, H. de, Growth of modern nations, 210 †
Toussaint, —, Voyage in German Gunboat up the Yangtse, 84
Towns—
Einfluss der Grossstädte auf die Luftfeuchtigkeit: V. Kremser, 441 †, 536 §
Geography of Great Towns: E. Oberhummer, 368
Stadtplan, seine Entwickelung und geographische Bedeutung: E. Oberhummer, 114 †
Towson, R., Ein Tatraforscher des 18 Jahrhunderts: H. Seidel, 443 †
Trans-Himalaya range, Tibet, 589
Transvaal—
Census of Transvaal Colony and Swaziland, 1904, Results of, 319 †
Geodetic Survey of Transvaal and Orange River Colony, Reports: Sir W. G. Morris and others, 319 †
Mines Department, Report of Geological Survey for 1906..108 †
Travel and Exploration, New Publication, 628
Travellers and Surveyors, New Instruments for: E. A. Reeves, 607
Trevor, R., En Route, 635 †
Trevor-Battye, A., Above the Victoria Falls, 319 †
Trilles, H., Un voyage au Congo française, 107 †
Tripoli—
Cirene e Cartagine: G. de Martino, 320 †
Nordafrikanische Tripolis und seine Mnschia: E. Banse, 541 †
Tripoliner Landschaft: E. Banse, 320 †
Tronnier, R., Beiträge zum Problem der Volksdichte, 210 †
Tropical diseases—
Advisory Committee for Tropical Diseases Research Fund, Report of, 211 †
Tropics—
Some problems of the tropics: R. de C. Ward, 114 †
Tschaeche, F., Der Sundgau, 83 §, 198 †
Tsu-yu-ho, Yunnan, 240
Tuat—
Frontière du Maroc. Oasis Sahariennes (Gourara - Touat - Tidikelt): A. G. Martin, 612 §
Tumuc-Humac Expedition under Lieut. de Goeje, 623
Tunis—
Géologique de la Tunisie, Essai d'une description: P. Thomas, 204 †
Recensement de 1906 en Algérie et en Tunisie: A. Bernard, 106 †
Turkestan—
Meteorologie von West-Turkestan: H. v. Ficker, 318 †
Turkey—
Maps of Turkey (Top. Section, General Staff), 644 †
Réseau ferré de la Turquie d'Asie: E. Cambier, 318 †
Turko-Egyptian boundary in Sinai Peninsula, Report on Delimitation: E. B. H. Wade, 168 §, 203 †
Twain river, New Zealand, 128

U.

Uganda—
Boundary Commission, Uganda-Congo: R. G. T. Bright, 488 *, 531
Journeys in north-east of Uganda Protectorate: H. A. Darley, 86
Photographs of Murchiston Falls and Fola rapids: C. R. Hall, 216 †
Topographical Surveys in, 397

Uhlig, C., Ostafrikanische Expedition der Otto Winter-Stiftung, 107†; Sogenannte Grosse Ostafrikanische Graben, 107†
Uinta Mountains, Lakes of the: W. W. Atwood, 109†
Ukio river, Tibet, 182
Ule, E., Das Innere von Nordost-Brasilien, 438†
United Kingdom—
Canals and Waterways, Royal Commission on, Minutes of evidence, etc., 200†
Climate of British Isles: A. Watt, 315†
Coast Erosion, Royal Commission on, 413§
Geological Survey, Summary of Progress, 636†
Historical geography on a regional basis, British Isles: E. W. Dann, 200†
Meteorological Observations at stations of second order for 1903..200†
Rainfall in British Isles, Geographical distribution of: H. R. Mill, 59*, 316†
Triangulation of British Isles, 402, 403
United States—
Boundary between Canada and United States, New demarcation, 309
Coast and Geodetic Survey, Report of Superintendent, 1906–1907..320†
Drowned Empire: R. T. Chapman, 321†
Forests and streams of United States, Saving the: T. E. Will, 640†
Geographic influences affecting early development of American commerce: E. R. Johnson, 321†
Geological Survey, Annual Report, 1907..639†
Highest Points in States in United States: N. H. Darton, 640†
Inland waterways, Our: W J McGee, 89§, 321†
Lake Ramparts: G. K. Gilbert, 190
Magnetic observations made by Coast and Geodetic Survey, Results of: R. L. Faris, 109†
Magnetic survey of United States, Some results of: L. A. Bauer, 188§, 542†
Meteorological elements of United States and solar radiation, Relations between: F. H. Bigelow, 542†
Population, Estimates of, 1904–1906..109†
Population in United States, Distribution of: A. P. Brigham, 380*
Physiography as a factor in community life: O. G. Libby, 437†
Transportation by water, 1906..640†
Waterways, Inland, 89
Waterways problem: L. M. Haupt, 542†
Urmia—
Lac d'Ourmiah: R. de Mecquenem, 317†
Uruguay—
Annario estadistico de la República Oriental del Uruguay, 207†
Ussher, W. A., Geology of Quantock Hills and of Taunton and Bridgwater, 316†
Uturu district, Southern Nigeria, 12

V.

Vacher, A., Jolivet's map of Berry, 528
Valladolid, Oviedo, etc.: A. T. Calvert, 538†
Valleys—
Formation of valleys in porous strata F. J. Bennett and E. C. Spicer, 277*
Vallot, J., Diminution of Mer de Glace, 303
Valot, P. P. Peuplement européen dans l'Afrique Mineure, 204†
Vancouver island—
Ethnology of south-east tribes of Vancouver Island, Report: C. Hill-Tout, 205†
Vanier, F., Chemin de fer de Konia-Bagdad, 202†
Vassileff, A. S., La Grande base de Pulkovo, 105†
Vaudry, J.-B, Dans l'Orient bolivien, 109†
Vaux, G. and W. S., Observations made in 1907 on glaciers in Alberta and British Columbia, 205†
Veatch, A. C., Geography and geology of South-West Wyoming, 542†
Veatch, O., Altamaha formation of coastal plain of Georgia, 109†
Veddas of Ceylon: C. G. Seligmann, 512
Vélain, C., Etat actuel de nos connaissances sur la géographie et la géologie du Sahara, etc., 108†
Velay—
Régions naturelles du Velay: E. Locussol, 198†
Velometer, ein verbesseter Entfernungsmesser: H. Habenicht, 112†
Venetia—
Ricerche Lagunari: G. P. Magrini and others, 314†
Venezuela—
Historia constitucional de Venezuela J. G. Fortoul, 207†
Neue Karte von Venezuela: W. Sievers, 438†
Palmas de la flora venezolana: A. Jahn, 438†
Venning, J. H., Notes on Southern Rhodesian Ruins in Victoria District, 108†
Verbeek, P., Donauversickerung bei Immendingen, 435†
Verbeek, R. D. M., Rapport sur les Moluques, 317†
Vergara, G. M., Refranes, modismos y cantares geográficos empleados en España, con relacion à otros pueblos, 199†

Vermont—
Wisconsin and Post-Wisconsin shorelines of North-Western Vermont, Some late: H. E. Merwin, 542 †
Victoria—
Highlands and main-divide of Western Victoria: T. S. Hart, 90 §, 207 †
Orography of Victoria: T. S. Hart, 90
Victoria Falls—
Above the Victoria Falls: A. Trevor-Battye, 319 †
Victoria Nyanza—
Levels, Relative, of Victoria and Albert Nyanzas: R. C. Allen, 85
Vienna—
Maps: Karte der Umgebung von Wien: J. G. Rothaug, 116 †
Viré, A., Le Lot, 538 †
Voeikof, A. J., Distribution of population over the Earth's surface, 114 †; Natürliche Vermehrung der Bevölkerung, 114 †
Vogel hook, Prince Charles Foreland, 142
Vojnich, O., Reisen im Vulkangebiete Oceaniens, 110 †
Volcano Islands south of Japan: T. Wakimizu, 529
Volcanoes—
Krater, Caldera und Barranco: F. Jaeger, 442 †
Volcanisme, Quelques recherches sur le: A. Brun, 114 †
Volga—
Débacle et la congélation de la Volga: E. Hey, 105 †
Vonitza, Greece, 50, 52
Vosges—
Vogesen, Die: E. Grucker, 316 †
Voss, E. L., Niederschlagsverhältnisse von Südamerika, 76 §

W.

Wabo, Tibet, 183
Waddington, R., Guerre de sept ans; histoire diplomatique et militaire, 198 †
Wade, E. B. H., Report on delimitation of Turco-Egyptian boundary between Vilayet of Hejaz and Peninsula of Sinai, 168 §, 203 †; Wade's method of determining Longitude: E. J. Scott, 65*
Wagner, H., Geographisches Jahrbuch, 212 †
Wagner, M. L., Das Nuorese. Ein Reisebild aus Sardinien, 199 †
Wahab, Colonel, remarks on "Problems in Exploration," 564
Wahehe, Geschichte, Kult- . . . und Jagd-Gebräuche: E. Nigmann, 318 †
Waineman, P., A summer tour in Finland, 617 §, 636 †
Wakimizu, T., Ephemeral Volcanic Island in Iwôjima Group, 317 †, 529 †
Wâkwâk, Îles, Râmny, Lâmery, . . . des géographes arabes: G. Ferrand, 115 †
Waldseemüller—
Cosmographiæ Introductio des Martin Waldseemüller, 444 †
Wales—
Itinerary through Wales and description of Wales: Giraldus Cambrensis, 200 †
Walker, A. O., on Amphipoda of Antarctic, 29
Wallace, D., Long Labrador trail, 320 †
Wallén, A., Till kännedomen om Lagans och Nissans hydrografi, 199 †
Walpole, Sir S., Growth of the World, 116 †
Ward, R. de C., Climate considered especially in relation to man, 440 †; Some problems of the tropics, 114 †
Waria river, British New Guinea, 504
Warnemünde—
Stoltera bei Warnemünde: E. Geinitz, 104 †
Wa-shih tribe, Se-chuan, 595
Washington—
Resources and industries, 1907. Bureau of Statistics, 321 †
Washington, H. S., Lincoln and its rocks, 104 †
Watherston, A. E. G., Northern Territories of the Gold Coast, 638 †
Watson, Sir C., remarks on "Some geographical aspects of the Nile," 478
Watt, A., Climate of British Isles, 315 †
Wauters, A. J., Voies d'accès au Katanga, 436 †
Weather: see Climatology
Webb, C. B.: see Gibson, W.
Weel, K. M. van, Een tocht op de Bensbach-rivier of Torasi, 207 †
Werth, E., Unterscheidung und Benennung eiszeitlicher Ablagerungen, 321 †
West Indies—
Cotton Growing Conference, 640 †
Danish: Fra de dansk-vestindiske Øer: T. Mortensen, 206 †
Hurricanes oder Drehstürme Westindiens: A. Fischer, 207 †
Westman, J., Mesures de l'intensité de la radiation solaire faites à Upsala en 1901..105 †
Wettstein, D., Brasilien und die deutsch-brazilianische Kolonie Blumenau, 438 †
Wheeler, W. H., North Sea: its physical characteristics, tides, etc., 209 †
Wherry, G., About Abyssinian Alps, 106 †
Whitbeck, R. H., Geographical influences in development of New Jersey, 321 †
White Horse Stone and its legend: F. J. Bennett, 539 †
Whymper, E., Valley of Zermatt and the Matterhorn; Chamonix, and Range of Mont Blanc, 314 †
Wichmann, A., Joris van Spilbergen, 1568–1620..443 †
Wickham, H. A., On the plantation . . . of Parà Indian rubber (*Hevea Brazilienses*), 544 †
Wiegand, T., Milet. Ergebnisse der Ausgrabungen und Untersuchungen seit dem Jahre 1899..202 †

Wiener Wald, round-backed ridges in the, 431
Wieser, F. R. v., Cosmographiæ Introductio des Martin Waldseemüller, 444 †; Karten von Amerika in dem Isolario General des Alonso de Santa Cruz, 541 †
Wiklund, K. B., De Svenska nomadlapparnas flyttningar till Norge i äldre och nyare tid, 315 †
Wilcox, W. D., Among the mahogany forests of Cuba, 640 †
Wildeman, E. de, Géographie du caoutchouc et son exploitation, 114 †; Plantes tropicales de grande culture, 210 †
Wilkinson, W. B., on progress of South Australian branch of Royal Geographical Society of Australasia, 188
Will, T. E., Saving the forests and streams of United States, 640 †
Willcocks, Sir W., White Nile and the cotton crop, 107 †
Willington valley, Kent, 287
Willis, B.: *see* Parker, H. N.
Willis, J. C., Ceylon: A Handbook for Resident and Traveller, 418 §
Wilson, E. A., Report on penguins and seals of Antarctic, 28
Wilson, Mount—
Magic Mountain: J. N. Patterson, 639 †
Windt, H. de, Through Savage Europe, 315 †, 423 §
Wisconsin—
Recession of Wisconsin ice, A possible overflow channel of ponded waters antedating the: F. Carney, 321 †
Withing, R., Kenntnis der Wasserbewegungen . . . in den Finland umgebenden Meeren, 442 †
Woeikof, A., Resultate des russischen Zensus und Zentrum der Bevölkerung Russlands, 636 †
Wolkenhauer, A., Seb. Munsters verschollene Karte von Deutschland von 1525.. 424 §, 435 †
Wollaston, A. F. R., Account of Plants collected on Mount Ruwenzori, 108 †; From Ruwenzori to Congo, 613 §, 638 †
Woods, H. C., Washed by four seas, 537 †, 617 §
Workman, F. B., Further Exploration in the Hunza-Nagar and Hispar Glacier, 495 *
Workman, W. H., Nieves Penitentes in Himalaya, 436 †; Some Altitude effects at camps above twenty thousand feet, 643 †; and F. B., Ice-bound Heights of the Mustagh, 71 §
World—
Diagrams of population, etc.: M. Jefferson, 115 †
Growth of the: Sir S. Walpole, 116 †
Maps: Atlas Antiquus: E. Reich, 119 †
Marine Chart of the World, 1502, by N. de Canerio: E. L. Stevenson, 647 †
Unconventional Map of the World: R. D. Oldham, 377 *
Worlds in the making; evolution of the Universe: S. Arrhenius, 208 †, 526 §
Wright, A., and H. A. Cartwright, Twentieth Century impressions of British Malaya, 540 †
Wright, M. R., Bolivia, 438 †
Wright, W. B., Two Earth Movements of Colonsay, 539 †
Wyoming—
Geography and geology of south-west Wyoming: A. C. Veatch, 542 †

Y.

Yaghan Indians, Magellan Straits, 593
Yako peak and stream, Yunnan, 248
Yamasaki, N., Topography of Japan, 510 †
Yangtse—
German gunboat's voyage up the, 84
Yarmuk valley, Palestine, 572
Year-book—
Geographisches Jahrbuch: H. Wagner, 212 †
Yellowstone—
Changes in Yellowstone Park: R. D. Grant, 640 †
Young, E., A-rational geography, 544 †
Young, F., Christopher Colombus, and the New World of his Discovery, 174 §
Young, G. W., remarks on "Formation of Valleys in Porous Strata," 292
Yukon—
Upper Stewart river region, Report on: J. Keele, 437 †
Yule island, New Guinea, 271
Yunge, G., Estadistica Minera de Chile en 1904 i 1905, 640 †
Yunnan—
Mission d'Ollone, 183 §, 436 †
Yun-nan-sen à Tch'eng-tou, De: H. d'Ollone, 183 §, 637 †
Yurung-kash or Khotan river, M. A. Stein's expedition to sources of, 598

Z.

Zahlbruckner, A., on lichens of the Antarctic, 33
Zailik valley, Gold-mines in, 599
Zat-el-Haj, Arabia, 576
Zeil, G., Contribution à la géographie tectonique du Haut-Tonkin, 201 †
Ziegler Polar Expedition, 1903–1905, Scientific Results, 80 §
Zöppritz K., Leitfaden der Kartenentwurfslehre für Studierende der Erdkunde und deren Lehrer, 208 †
Zurich—
Geologie der nördlichen Teile des Kantons Zurich: J. Hug, 538 †

INDEX TO MAPS.

EUROPE.

Balkan Peninsula, Sketch-map illustrating paper by N. Buxton, 328
England: Formation of Valleys in Porous Strata, Sketch-maps, I.–IV., 278–286
Greece: Maps illustrating C. M. Church and J. L. Myres' paper on Topography of North-West Greece, 48–54
Manchester Canal, Sketch-map of Hinterland, 499

ASIA.

Asia, Unexplored Western, Sketch-map to illustrate paper on, 648
Hejaz Railway, Sketch-map illustrating paper by F. R. Maunsell, 571
Salween, Upper, Sketch-map showing Journeys of G. Forrest, 328
Se-chuan, Province of, Map of part of the, 648
Tibet, Sketch-map of S. Hedin's Routes in 1906–8 .. 526

AFRICA.

Abyssinia and British East Africa Protectorate, Boundary between, according to treaty of Jan., 1907 .. 622
Africa, British East, Sketch-map of Country between Kitui and Tana River showing L. Aylmer's routes, 120
Congo State, Levels along lines of projected Railways from Upper Congo to Albert Nyanza and Tanganyika, 548
Kamerun and French Congo, Map showing Boundary between, April, 1908 .. 88
Nigeria, Southern, Recent Explorations of E. A. Steel in, 120
Nile Basin, to illustrate paper by H. G. Lyons, 548
Rhodesia, North-Western, Sketch-map of part of, 648

AMERICA.

America, South, Sketch-map showing route of H. Bingham from Caracas to Bogota, 448
British North America, Sketch-map of Aylmer and Clinton-Colden Lakes: E. T. Seton, 276
Newfoundland, Sketch-map showing proposed railway between Green Bay and Bonne Bay: H. C. Thomson, 159

ARCTIC.

Spitsbergen, Preliminary map of Prince Charles Foreland, from surveys by W. S. Bruce, 216

AUSTRALASIA.

New Guinea, British, from Explorations and route surveys by W. M. Strong, C. A. W. Monckton and F. R. Barton, 328
New Zealand, Sketch-map of Country between Milford Sound and Te Anan Lake: P. Marshall, 355
New Zealand, Sketch-map showing Portion of Southern Alps: J. M. Bell, 216

GENERAL.

World, Unconventional map of the: R. D. Oldham, 378

ILLUSTRATIONS AND DIAGRAMS.

EUROPE.

Balkan Peninsula—
Austrian railway route, Present condition of, 231
Balkan lake, 219
Buffaloes in Europe, indicating proximity of Asia, 221
Industrial waste: a burnt farm, 229
Industrial waste: Moslem Albanians fully armed, 233
Market in liberated Balkan country, 227
Rilo monastery in Bulgaria, 222
Greece, North-Western—
Argos Amphilochicum, 53
Greece, North-Western—*continued.*
Vonitza, Attack of, 51
Vonitza castle from south-west, 53
Maidstone and West Malling area—
Caverns near end of Willington valley, 285
Gorge of the Shode, Ightham, 288
Leybourne, Natural dam, 281
St. Leonard's Park gorge, 281
Steep rise at foot of which the river issues, 283
Swallow-hole, Willington valley, 283
Where first loss of loose occurs, 285

ASIA.

Burma—
Tilin-Daik-Thein, 433
Hejaz Railway—
Batn-el-Ghrul escarpment from the east, 581
Country east of line near Tebuk, 577
Haraat-i-Ahmar from south, Approach to, 581
Kalaat-i-Mudeverre station, 573
Maan station, 583
Oasis of Tebuk, Kala of Tebuk, 577
Pilgrim route to Mecca, Kala of Zat-el-Haj, 573
Salwin, Upper—
Lichiang range, Panoramic view of, 263
Ming-Kwong Lissoo Group, of village of Ta-chu-pa, 255
Native of Salwin valley, 253
Suspension bridge on Ming-Kwong river, 241
Suspension chain bridge on Mekong river, 243
Ta-chu-pa village, 259
Talifu city, Bird's-eye view, 247
Teng-Yueh, City of, looking west, 251

AFRICA.

Africa, First circuit round—
Greater Egyptian scarab, 483
Lesser Egyptian scarab, 481
Nigeria, Southern—
Cross river, On the, 13
Girl from Oguta country, 17
Girl from Oka country, 19
Onicha landing-place on Niger river, 9
Washing Day on Niger river, 11
Woman from interior, Ahiara country, 15
Nile, Some geographical aspects—
Atiri rapids, 469
Dal cataract, Portion of, 467
Dumag island, Upper end of fourth cataract, 463
Egyptian land measurers, Thebes, 473
Hannek cataract, Portion of, 466
Volume discharged by Nile, Diagram, 454

AMERICA.

Caracas to Bogotá—
Boca de Surifa from left bank of Rio Azure, 343
Boyaca, Battlefield of, 337
Carabobo, Battlefield of, 330
Making a Chinchora hammock at El Rimbo ranch, 339
Sogamoso, Plateau and valley of, 341
Tinaco, Salto de, 333

Newfoundland—
Birchy pond, 157
Birchy pond, Below rapids, 158
Bonne bay little pond, 160
Deer arm, Bonne bay, showing Gros Morne, 162
Goose Lake camp, 160
Valley about 2 miles inland, through which proposed railway descends to south-eastern arm, Bonne bay, 161

AUSTRALASIA.

New Zealand—
Copland river and Architect creek, Junction of, 125
Footstool, Moorhouse range and Copland pass, 127
Hanging valley, Karangania river, 133
Hooker to Perousa and Baker's saddle, Looking up, 129
McKerrow glacier, frontal face, 131
Mckerrow glacier, Head of, 123

Te Anan lake and Milford sound—
Avalanche talus slope, Summit of, 357
Cirque at head of North Clinton valley, 361
Hanging valley on route leading to pass 1070 feet high, 359
Iceberg lake, showing western ranges over pass, 363
North Clinton valley, 356

GENERAL.

Astronomical compass and time indicator: E. A. Reeves, 609
Longitude instrument, designed by E. B. H. Wade, 66

END OF VOL. XXXII.

PRINTED BY
WILLIAM CLOWES AND SONS, LIMITED,
LONDON AND BECCLES.